

**ASSISTANCE TO MUNICIPALITIES  
ACTION PLAN FOR  
DURRES, KORCE AND ELBASAN  
ALBANIA**

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**HOUSING AND URBAN DEVELOPMENT ASSISTANCE  
IN CENTRAL AND EASTERN EUROPE**

**CONTRACT No. EPE-0034-C-00-5110-00**

**ASSISTANCE TO MUNICIPALITIES  
ACTION PLAN FOR  
DURRES, KORCE AND ELBASAN  
ALBANIA**

**USAID Housing and Land Development and Urban Infrastructure Program**

In a Memorandum of Understanding (MOU) signed in January 1996, the Government of Albania and the Government of the United States agreed to work jointly to undertake reforms in the urban housing and land development and infrastructure sectors. Under the terms of the MOU, USAID, is committed to:

- provide policy and legal advice to support the development of the legal, regulatory and institutional framework governing the housing and land development and infrastructure sectors in Albania
- provide training to strengthen the capacity of Albanian personnel and institutions to implement and sustain sector objectives
- assist in implementing pilot projects in Albania in order to achieve concrete improvements in each sector, while building experience, capacity and credibility.

The specific objectives of the MOU fall in two areas. They are as follows:

- Urban Infrastructure Privatization and Regulation
  - i. Improve the quality of urban services by increasing the investment and improving the management through private sector privatization
  - ii. Establish the legal and regulatory instruments necessary for sustainable improvements in service quality
  - iii. Increase the human resource capacity to manage investments in, and operations of, urban infrastructure and services through training and technical assistance
- Housing and Land Development
  - i. Increase access to adequate and secure housing for a broad income range of households by making serviced land available for development and by increasing the participation of private individuals and enterprises in the housing sector.

ii. Improve the quality of residential living and protect environmentally sensitive areas by increasing the provision of infrastructure, urban services, and housing maintenance to selected residential communities.

iii. Increase the efficiency of land use and urban growth, and of public investments in infrastructure and housing, by instituting strategies that promote private participation in development, cost recovery, land development controls and income-targeted subsidies.

### **Relation to USAID Strategic Objectives**

The technical assistance and training activities have been established under Strategic Objective 2.3 of the overall USAID program in Albania which is to promote “More Effective, Responsible, and Accountable Local Government”. Within the context of this strategic objective, the intermediate results, indicators and targets that correspond directly to housing and land management development and urban infrastructure are as follows:

#### **IR2.3.2.1: Local Government provides improved services**

##### **Performance Indicators (Targets):**

- Number of cities with a 50% increase in hours of water service (Target for year 2000 - 12 cities)
- Increased investment in municipal services (Target TBD)
- Number of cities with increased volume of garbage collected and deposited in landfill (Target for year 2000 - 8 cities)

### **Background and Objectives of this Action Plan**

This proposed Action Plan will expand USAID efforts outside the capital city of Tirana, where prior assistance in housing and land development has been concentrated. The objective of the Action Plan is to provide coordinated assistance by U.S. and Albanian specialists in cities in Albania other than the capital Tirana to help improve access to adequate and secure housing served by basic infrastructure services, as described in the objectives of the MOU signed in January 1996. The assistance to the cities will be managed by a small core of U.S. and Albanian specialists who will develop a consistent approach to addressing similar issues in each participating city. That approach will draw on the lessons learned and experience gained in the Tirana Land Management Program, which will be adapted and replicated in the work with other cities. This will include the creation of a task force in each city with representation of key officials from the city itself, from the corresponding district and from the central government. The task force will provide leadership and guide the implementation of the activities proposed under this Action Plan in the city. The priority of the team of specialists will be to build up the knowledge and skills of the counterparts in each city, and at the district and national levels, so that they can carry on the work.

To improve the prospects of providing real, practical solutions to existing housing and infrastructure problems, USAID has targeted cities which are receiving assistance under its Public Administration program and which have or might obtain access to resources from other donors, especially in the area of financing for investments in infrastructure. As a first step in the process of identifying the cities that might receive assistance, USAID convened a conference of mayors from six large to medium size cities in Albania in Tirana on July 10 and 11, 1996. The response was encouraging. Mayors and city planners identified their most pressing problems in the key areas. They all expressed an interest in receiving assistance to solve these problems. A USAID consultant met separately with each mayor and their staff to discuss potential projects. As a result of this preliminary screening, and based on other criteria, such as the likelihood of other donor financing for infrastructure, USAID has decided to provide assistance initially to Durres, Korce and Elbasan.

This Action Plan describes the activities to be carried out in each of these three cities. A team of U.S. and Albanian specialists traveled to Durres, Korce and Elbasan during the weeks of November 4 to 22, 1996 to meet with the mayors newly elected in October and with their staff. The list of proposed activities included in this Action Plan are the product of those meetings and discussions. In all cases they represent a convergence of the priorities of the mayors and other local officials on the one hand and of the areas of assistance included in the MOU between USAID and Government of Albania on the other.

### **Overall Structure of the Proposed Activities**

The visits to Durres, Korce and Elbasan, as well as the prior experience in Tirana, suggest that two key factors account for many of the current problems that cities face in providing adequate urban services to the residents of their communities. One factor is the deteriorated condition of key urban infrastructure systems, including water, waste water and roads after years of deferred maintenance. The other factor is the difficulty cities confront in keeping up with the demands for services generated by the sudden unplanned development of new housing, largely on peripheral lands, starting in the late 1980's.

Deferred maintenance helps explain why the water companies in Durres, Korce and Elbasan have been forced to limit service to their residential and business clients to a few hours each day. The existing sources that supply the water systems in those cities are adequate to serve not just the existing population, but also projected growth for many years. The water distribution system covers all areas of the cities and the pressure is adequate to serve those areas. The problem is the deteriorated state of the system, which loses more water to leaks than it serves to the clients. The water companies have elected to pressurize the systems for only a few hours each day, usually in the very early morning, in order to minimize the losses from these leaks. Most homes, apartment buildings and businesses have small storage tanks on their roofs which are filled during this brief period of service. Many of these tanks have uncontrolled

overflows which result in additional lost water. This intermittent operation causes several related problems. The most significant is the introduction of contaminated ground water into the water pipes during the off periods. When the systems are shut off and drain down, pipes which leak under pressure will be

City	(1) Population	(2) Water Supply (liters/sec)	(3) Max Popul Se
Albania: Assistance to Municipalities - Action Plan			
Durrës	200,000	700	4
Shkërbë	80,000	300	1
Tirana	137,800	1,000	5

- ) Total population currently served by the water distribution system (includes areas served outside the city)
- ) Estimated average water supply yield
- ) Theoretical population that could be served by the existing supply, assuming no lost water
- ) Average hours of service per day as reported by the water enterprise
- ) Estimated water lost at 24 hour service
- ) Calculated water lost based on population currently served, assuming 150 l/capita/day, existing loss percentage and current hours of service
- ) Cost based on 10.33 lek per cubic meter lost water. Current price as calculated in SAID water rate study

sources of groundwater infiltration when the pressure is off. Existing waste water collection systems and the city streets suffer as well from the accumulated consequences of years of deferred maintenance.

Deferred maintenance also is a serious problem affecting the large stock of apartments built by the state and privatized since 1989. Combined with the poor quality of the initial construction in many cases, the total lack of preventive maintenance will shorten the useful of the apartments. This problem will become a major burden in the future when there will be a need to build new housing units to replace a significant part of the housing stock. The poor conditions in the blocks of apartments already is causing difficulties. A study by a World Bank consultant in Elbasan for the water enterprise shows that as much as 80 percent of unaccounted water lost in the system can be attributed to misuse and deferred maintenance in the blocks of apartments.

The rapid growth of unplanned residential developments on the periphery of cities has far surpassed the existing capacity of cities to manage urban growth and to extend services to the new areas. There are two problems. One is the adherence to city planning concepts and methods designed to control and dictate growth that have not proven to be agile enough to keep up with private housing initiatives in an evolving market economy. The other is that both the cities and the families who have developed new housing continue to rely solely on the central government to finance the expansion of the urban infrastructure systems to serve the new areas. Faced with the need to impose fiscal austerity, the Government of Albania has had to curtail expenditures and has been unable to provide the required financing. Further, it is not clear that the central government should have to bear the full burden of financing the expansion of urban services. Eventually, such investments should become the responsibility of the cities, the utility enterprises and the homeowners themselves.

Because the causes are similar, the response to the problems in the three cities will be similar. The assistance proposed in the Action Plan for Durres, Korce and Elbasan is a specific implementation of one of the five following typical activities.

With regard to the problems caused by deferred maintenance, the activities are of three kinds:

- One is to help the cities develop “bankable” projects for financing by foreign donors. These are projects to finance the large accumulated cost of repairing and rehabilitating the infrastructure systems. The World Bank water loan in Durres and the German government water loan in Korce are good examples of such projects. The effect of the investment is to allow the city to catch up after years of neglect. USAID assistance would address the pre-project analyses required to qualify for donor financing.

- The second typical activity is to address the underlying cause of the problem, that is the lack of routine maintenance. The USAID privatization agenda already is addressing this issue. The idea is to help these enterprises operate on a more business-like basis so that they can generate the funding needed for routine maintenance and new investments. At that point, the private sector also can become involved in operating and or owning all or part of the system. USAID assistance at the city level would help the local utility enterprises in such areas as analyzing rate structures, implementing cost accounting and cost management systems, improved bill collection, design of operating and maintenance plans, as well as techniques for contracting out or selling all or some of their functions to private investors and providers.
- The third activity will address the issues of lack of maintenance in the blocks of privatized apartments. The objective is to initiate a sustainable process through which home owners assume responsibility for providing preventive maintenance in their units and buildings. This activity will seek to raise the level of awareness and concern among residents and local officials of the short- and long-term consequences of deferred maintenance of the housing stock. USAID assistance will help identify practical measures that residents can take within their means to begin to address the issue and will provide guidance on how to form associations of home owners to administer the process.

With regard to the problems generated by the inability of cities to keep up with growth, the activities are of three kinds:

- One activity is to help the cities develop “bankable” projects for donor financing in this case to finance the expansion of infrastructure systems to serve the urban growth areas. As in the case of the repair and rehabilitation of the systems, the effect of such donor projects is to allow the city to catch up with the problem. USAID assistance would address the pre-project analyses required to qualify for donor financing.
- A second activity would begin to address the underlying causes of the problem. Cities can no longer rely on the central government to foot all or most of the bill for the cost of providing services in growth areas. Eventually, such investments should become primarily the responsibility of the cities, the utility enterprises and the homeowners themselves. USAID assistance would help the city analyze the costs of alternative growth strategies and standards and develop cost sharing and cost recovery mechanisms to finance the investments with contributions from all parties. This would be expressed in a city policy on how to finance investments in infrastructure. It would be reflected in an investment and financing plan and in land development standards and regulations.
- The third activity also would seek to address the underlying causes of the problem, in this case the need for urban growth management rules and procedures that are more agile and better adapted to a market-driven housing sector. Central planning and rigid controls are no



longer viable. USAID assistance would help the city develop and implement tools such as zoning, land use and subdivision regulations all applied in the context of more dynamic structure plans to guide growth and promote and encourage private development.

All these activities will unfold in the context of a slow and incomplete decentralization of authority from the central to local governments and as part of a transition to a market economy. This means that the cities will have to be astute in involving many different parties as partners in the activities described above. City and local enterprise officials alone do not have the authority or the resources to implement any of the activities. They will need to construct alliances and collaborative efforts with district and central government officials, as well as with the residents in the local community and the new actors in the private housing sector, such as architects and developers. The experience in Tirana with the Land Management Task Force supported by the Government of Albania and USAID provides a valuable example of this approach that will be adapted and replicated in the work with other cities.

Table 1 shows which of the five typical activities are proposed in the Action Plan for Durres, Korce and Elbasan.

## Deferred Maintenance

Bankable” projects for donor financing	Albania: Assistance to Municipalities - Action Plan
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Privatization and enterprise restructuring	The <i>Landfill Management Plan</i> will help the cleaning enterprise develop and implement a landfill management plan and prepare for possible privatization of the landfill operation
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### DURRES, ALBANIA PROPOSED ACTION PLAN November 1996

Housing  
maintenance  
and  
rehabilitation

#### General Situation

The City of Durres is Albania's primary port on the Adriatic Sea. It has a population of an estimated 100,000 - 110,000, up from about 85,000 in 1990. The city is at the

## Urban Growth

Bankable” projects for donor financing	The <i>Neighborhood Improvement Project</i> will help the city develop a proposal for donor financing to upgrade an area where 400 families live on own land without basic services. The <i>Neighborhood Improvement Project</i> also will help the city identify immediate service improvements it can finance in the area with its own and community resources.
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hub of the country's transportation system with rail and road connections to the north, south and east. It has a mild climate, cultural and historic resources (including a Roman amphitheater in dilapidated condition) and portions of ancient Ottoman city walls, and desirable recreational beaches. It also has ample areas set aside for industrial development as well as a developable land areas just beyond the current city borders.

Financing  
urban growth

Housing is primarily in multi-family 4-5 story buildings built over the past 50 years. These are organized around common courtyards and are concentrated in the center of the city. Buildings appear to be in fair to poor condition. Court yards are unimproved and typically cluttered with bunkers, kiosks, storage sheds and garages, and occasionally, huts used as living quarters. The Planning Director indicates that these uses are permitted and legally built but most appear to be of poor and unprofessional construction.

Managing  
urban growth

Some new housing, built since 1991 can be seen in the central area including several new apartment buildings and substantially built individual homes. To the south of the central district and behind the beach are a number of

older and more recently built individual homes. Along the northern beach area in the Currila district, there are approximately 12 high rise apartments under construction which will provide 260 new apartment units. In 1992-93, the city subdivided large tracts of vacant state owned land adjacent to the central district in three sub neighborhoods referred to as the Hospital, Milk Factory and Stadium areas (hereinafter referred to as the Tri-Neighborhood District. Four hundred lots were created and sold to individuals, most of whom have built detached single family homes.

There are an estimated 800 illegal squatter homes in Durrës located in two major concentrations. One is within a 170 hectare tract of state owned land - known as the Gateway Area - which the City desires to develop as a planned new neighborhood and for which there is an approved site plan. This area was drained in the 1930's and is maintained by a flood control pump station located near the northern beach area. There are approximately 200 illegal homes scattered within this area, which also includes the solid waste dump site. The other concentration is in the Shkozë district, which is in the eastern portion of the city adjacent to an industrial district. Some of these homes may be built on state land and others on private land. Illegal homes and the homes in the Hospital portion of the Tri Neighborhood District are not served by public sewers. The illegal homes are not served by public water supply. An artesian (flowing) well drilled near the dumping area provides water to this illegal housing area. Those in the Hospital area are served only by neighborhood stand pipes.

Land Ownership A number of land parcels in the city have been repossessed by former owners and housing is being or has been built on them; these include the Currila apartments described above. Approximately 500 other individuals have restitution claims for developed properties. A restitution commission is now in the process of allocating vacant state land to these people as compensation for the property that they can't reclaim, some of which will be in the Gateway Area referred to above. It is expected that this process will be completed within the next two to three months.

Water is supplied to Durrës by a District Water Enterprise. This enterprise operates the largest water system in Albania in terms of geographic area and total length of pipelines. It serves a total population estimated at 200,000, including 120,000 in Durrës and 80,000 in the municipality of Shijak and 69 villages connected to the long transmission pipelines. Bulk water is also sold to the municipality of Kavajë located south of Durrës. The water enterprise has been the subject of numerous previous studies and is presently undergoing extensive rehabilitation under a multi-phased program with World Bank Financing. USAID has also prepared an analysis of current operating costs and water rates recommendations.

The water supply comes from two well fields located to the north of Durrës. The Fushe Kuge well field has a dependable yield of 700 liters per second and is located 40.5 km north of Durrës. The second well field is located in Fushe Krujë, having a yield of 140 liters per second. The combined yield of 840 liters per second represents a daily capacity of 72.6 million liters per day (19.2 million gallons per day). After subtracting the bulk water sold to Kavajë (2.6 million liters per day) and using an average daily usage of 150 liters per day (39.6 gallons), this supply should serve a population of approximately 466,000. Since the existing population served is estimated at 200,000 the supply seems more than adequate. Due to the poor condition of the distribution systems, water lost through leakage and illegal connections is estimated at 70 percent if the distribution systems were pressurized 24 hours per day. Due to this high rate of unaccounted for water, the water distribution systems are pressurized for only three hours per

day, usually during the early morning. Most homes, apartment buildings and businesses have small storage tanks on their roofs which are filled during this brief period of service. Many of these tanks have uncontrolled overflows which result in additional lost water. The supply pipelines are pressurized 24 hours per day.

This intermittent operation causes several related problems. The most significant is the introduction of contaminated ground water into the water pipes during the off periods. When the systems are shut off and drain down, pipes which leak under pressure will be sources groundwater infiltration when the pressure is off. This is especially serious in the higher elevations of the distribution systems which will experience negative pressures (vacuum) when the system is turned off. The director of the Durrës water enterprise stated that additional liquid chlorine (four times the normal rate) is added to the water at the supply wells and storage tanks to account for this contamination source. The intermittent nature of the service also reduces the systems availability and response time for fire protection.

Wastewater The wastewater collection system in Durrës contains 130 km of combined storm drainage and sewer pipes. Large open canals in the flood control area collect several discharges and drain them to the main flood control pumping station where they are pumped to the sea. A second discharge near the beach and port will be eliminated when pumping station No.7 is rehabilitated by the World Bank Project. The biggest problem with the wastewater collection system is deferred maintenance. The wastewater enterprise has no equipment, other than hand tools and it was reported that 60% of the system is blocked with silt and sand. The material has washed into the system from construction activities in the hilly areas above the town and the recent construction of telephone, power and water pipes. One of the large main collector channels is blocked causing a local over load of other collectors and Pump Station No.8. This area floods during every rain. All wastewater is discharged to the sea without treatment. Potential treatment of the wastewater was considered by the European Union but given a lower priority as compared to the City's other problems.

Solid Waste The collection and disposal of solid waste is the responsibility of one of five enterprises under the authority of the City of Durrës Director of Public Works. The city is divided into two collection zones. Zone A, including approximately 60% of the area and population of the city, was privatized in July, 1996, after a competitive tender process. According to contract conditions, the contractor will service containers every day, six days per week at an annual cost of \$380,000. The City cleaning enterprise is continuing to provide collection services in Zone B which includes the remaining 40% of the city. The City also collects waste in illegal housing development both inside and outside the yellow line, but containers are not provided. When the new contractor containers are placed in Zone A, the City will upgrade containers in Zone B and provide containers in the illegal housing zones. The cleaning enterprise is performing surprisingly well. In the areas that the team visited, the waste is efficiently collected. The streets are relatively clean and there is no evidence of significant informal dumping.

Collected waste is currently dumped in an open area, adjacent to the Gateway Area and to old fish ponds. The disposal site, which covers 2 to 3 hectares, is accessed by a 1 km dirt road which is in very poor condition and inaccessible during heavy rainfall. When the trucks cannot make it to the actual dumping site, they dump along the access road, which is lined on both sides with waste piles. The access road is also lined on the south side with illegal housing. The waste is dumped in piles and is not compacted or covered. Basically the site is being operated very inefficiently with only one layer or lift of waste. On the day of the inspection there were no fires in the areas but the Director reported that fires were an occasional problem. Although there is a bulldozer on the site it was not operating.

Cost of Urban Services Starting in January of 1997, the central government will discontinue all operating subsidies for water and solid waste services. The corresponding enterprises will depend solely on service fees to finance their operations. This policy already seems to have been implemented *de facto* in the area of solid waste. According to the Director of Public Works, the central government has not paid its share of the costs of the private solid waste contract during this year. The City owes the contractor over \$193,000 for services performed since July, 1996. If the central government follows through with the decision to discontinue operating subsidies, fees for solid waste services will have to increase by more than ten times to cover current costs. Using the private contract in Zone A as a reference, an average family of four would have to pay Lek 160 per month for solid waste services in Durrës compared to Lek 2.50 per month at present.

The cost of supplying water through the Durrës regional system was the subject of an Urban Services Water Rate Analysis, conducted by USAID in September, 1996. It showed that in 1995 the revenue collected from water bills averaged Lek 12/m<sup>3</sup> produced, compared to an estimated cost of Lek 27/m<sup>3</sup>. The study recommended increasing water rates for 1997 and beyond by almost three times to generate an average revenue from all users of Lek 30/m<sup>3</sup>. If the residential rate were to triple to Lek 15/m<sup>3</sup>, an average family of four would pay Lek 270 per month, as compared to Lek 90 at present. The combined solid waste and water service charges would increase from Lek 92.50 to Lek 430 per month. This would represent just over 4% of the current average monthly family income of Lek 10,000. It will require a concerted effort by the City and the enterprises to implement this dramatic increase in the cost of public services.

Infrastructure Investments The World Bank Project is the only major existing investment in basic infrastructure services in Durrës. A feasibility study was conducted for the Durrës water system in 1993. As a result of that study, a two-phased project of rehabilitation has been started. The World Bank is financing the first phase of \$19 million that includes the rehabilitation of 60 km of distribution pipelines in Durrës and Shijak and the installation of 32,000 individual user meters. The existing transmission main will also be upgraded through pressure control stations and master meters for each of the village distribution systems. In the City of Durrës, the first

phase work is divided into six zones. To date, rehabilitation of distribution pipes has been completed in only one zone. Installation of meters has not begun.

The original feasibility study also identified many deficiencies in the sewage collection system. Several of these problems, considered to be of an emergency nature, have been included in the phase one World Bank project. These include the restoration of pump station No. 7 and the elimination of the raw sewage discharge to the beach area just north of the port. Phase one also includes funding of \$300,000 for equipment needed to clean and maintain the sewage collection system.

The second phase of the project, estimated to cost \$21 million, will include the rehabilitation of an additional 60 km of distribution pipelines in Durrës and Shijak. The second phase will also replace all pumps and motors in the two well fields. It includes a second transmission main from the Fushe Kuge well field, following a different route, closer to the shore areas. Since the existing supply yield and system demand do not appear to justify the additional transmission pipeline, this portion of the project is the subject of further evaluation. Studies prepared as part of Phase One of the project have identified several areas of the city where distribution extensions are needed as a result of housing development that has occurred since the feasibility study was completed in 1993. They include the Tri-Neighborhood District and the illegal housing in the Gateway Area. It is anticipated that these areas will be added to phase two of the project. Funding and design of the second phase have not been completed.

Investments by the municipality of Durrës in infrastructure have been very limited. In 1996, the city expected to receive \$280,000 from the central government for road surfacing and improvements to the drainage. In addition, it programmed \$150,000 from its own resources for additional work in road surfacing and for improvements to the sidewalks in the city. None of the central government funds have been made available to date. Use of the city's own resources have been blocked by the Treasury pending the conclusion of the elections of local officials. City officials estimate that the proposed investments in road surfacing would address about 50 percent of existing needs. At the moment, it is not clear how much, if any, of the investments will take place.

### **Proposed Action Plan**

The objective of the proposed action plan is to improve access to adequate and secure housing served by basic infrastructure services in Durrës, consistent with the objectives of the MOU signed in January 1996 by USAID and the Government of Albania. Accordingly, the work program includes activities to improve the water, waste water and solid waste services available to the residents of Durrës, as well as activities that increase the efficiency of land use and urban growth, and of public investments in infrastructure and housing. The action plan will provide practical, short-term solutions to existing problems in Durrës in these areas. It also will help build the capacity in the medium term to improve services and to mobilize additional

investments in infrastructure for new and existing housing in Durrës. The proposed activities are as follows:

- Activity 1: Durrës Neighborhood Improvement Project - This activity will address the needs of 400 families living without basic services on plots of land distributed by the city in three separate neighborhoods in 1992-1993. The expectation is that the city will make modest investments in infrastructure in the area in the short term with resources from its own budget and from private land owners, while seeking donor funding for an expanded investment program in the medium term. The activity also will build a local capacity to promote private initiatives to build housing, implement cost recovery and income-targeted subsidies to finance service provision and rely on land use regulation and subdivision controls to guide development. (Attachment 1 provides a detailed work plan for this activity.)
- Activity 2: Durrës Landfill Management Plan - This activity will help the city cleaning enterprise prepare an operating plan for the existing landfill to include: periodic compaction and covering, access, vertical and horizontal construction, fire control, leachate management, recycling potential, environmental monitoring, record keeping and site closure. The immediate impact will be to remove potential health hazards in the landfill in Durrës in a relatively short period. The assistance also will explore the option of a private contract for landfill operations. The Durrës landfill management plan will provide a replicable model of landfill management tools which are specific to local waste composition, geological conditions and weather, and are feasible within the resource limitations of local solid waste enterprises in Albania. (Attachment 2 provides a detailed work plan for this activity.)

**ATTACHMENT 1**  
**Activity 1: Durres Neighborhood Improvement Project**  
**Activity Description and Work Plan**

The three neighborhoods where the city of Durres distributed residential plots in 1992-1993 provide an excellent opportunity to develop a pilot service provision project. Most of the housing is in place and located on land owned by the residents and urban services are urgently needed. The activity will be managed by a Durres Task Force convened by the city with additional representation from the district and central government. This will provide an opportunity to build an alliance among the city, district and the central government authorities and staff responsible for land management and infrastructure investments. The proposed activity is similar in key respects to the projects in Tirana that are under the guidance of the Land Management Task Force (LMTF). Many of the survey and planning techniques pioneered by the LMTF can be applied to the proposed Durres project. The commitment of the Ministry of Construction to contribute toward the staffing of a Durres Task Force will assure an effective transfer of the lessons learned by the Tirana LMTF.

The most important objective of the Durres Neighborhood Improvement Project will be to improve the quality and volume of infrastructure and urban services for the 400 families living in the area. To this end, the initial analysis will focus on those service improvements that can be financed with the combined resources available to the city and to the residents of the community. This will provide the opportunity for the city to develop a general policy on financing for new services in other urban growth areas of the city. Those investments in the Neighborhood Improvement Project area that cannot be financed by the city and community will be packaged as a proposal for donor financing. The Durres Task Force can then apply the knowledge and experience gained in preparing this first proposal in other areas of the city with similar problems.

The key benchmarks that will serve to measure progress in achieving the objectives of the Tri-Neighborhood Improvement Project are:

- Approval by the Durres Task Force of the preliminary project design and financing plan
- Approval by the City of a policy on financing for new services in urban growth areas
- Implementation of initial service improvements with city and community resources
- Completed proposal for donor financing for additional service improvement investments



The quantifiable measure of project impact will be the number of families who obtain access to housing with basic services, including connections to water and waste water systems and access to solid waste collection services.

tasks	
conduct an initial workshop for Durres and Korce on the concepts and methods of neighborhood improvement, using the Tirana experience as a model	
<b>Durres: Proposed Action Plan</b>	<b>9</b>
Inventory existing physical & environmental conditions, including location and condition of infrastructure and housing and property boundaries	<p style="text-align: center;"><b>ATTACHMENT 2</b></p> <p style="text-align: center;"><b>Activity 2: Durres Landfill Management Plan</b></p> <p style="text-align: center;"><b>Activity Description and Work Plan</b></p> <p>The existing solid waste dumping area is uncontrolled and presents a significant threat to public health through surface water contamination, air pollution and disease spread by insects and vermin. Both design controls (excavation, drainage, leachate systems) and operating controls (compaction, covering, fire prevention, record keeping) are needed to remove these potential health hazards. The proposed management plan will give the cleaning enterprise the tools and guidelines to improve the existing landfill operation. The proposed plan also will provide a replicable model of landfill management tools which are specific to local waste composition, geological conditions and weather, and are feasible within the resource limitations of local solid waste enterprises in Albania.</p> <p>The key benchmarks that will serve to measure progress in achieving the objectives of the Durres Landfill Management Plan are:</p> <ul style="list-style-type: none"> <li>– Agreement on landfill management plan following workshop in Durres</li> <li>– Completed assessment of Durres landfill management implementation strategies, including</li> </ul>
Complete a socio economic survey to determine household characteristics, such as income and tenure, as well as organizational affiliation	
Convene and organize a neighborhood advisory committee to review local problems and development needs and priorities	
Complete the analysis and review of existing conditions, problems and priorities	
Develop schematic service improvement designs and cost estimates. Prepare a financing plan, including a cost sharing and affordability analysis. Identify feasible investments with city/community resources	
Review the preliminary designs and financing plan approve investments for immediate implementation	
Prepare and submit a proposal for donor financing	

privatization

- Presentation by the Durres cleaning enterprise of proposed landfill management plan and implementation strategy for approval by appropriate authorities

The quantifiable measure of project impact will be the increase in the volume of solid waste deposited in a landfill that is managed properly.

Tasks	
Develop process to collect solid waste tax and to address problems of non-payment	
<b>Durres: Proposed Action Plan</b>	
Inventory existing conditions including waste generation and composition, collection methods, existing dumping practices.	
Develop landfill management plan, including design and operating controls, equipment needs and additional area required. Prepare estimate of related operating and capital costs.	
Conduct workshop for enterprise staff to review and discuss proposed landfill management plan	
Assess alternative implementation approaches, including privatization of landfill management	
Prepare preliminary proposal for review by enterprise and city officials of landfill management plan and implementation strategy	
Implement approved landfill management plan and implementation strategy	

## ANNEX A DURRES INFRASTRUCTURE ASSESSMENT

### 1.1 WATER

#### 1.1.1 General

Water is supplied to the City of Durres by a District Water Enterprise. This enterprise operates the largest water system in Albania in terms of geographic area and total length of pipelines. It serves a total population estimated at 200,000, including 120,000 in the City of Durres and 80,000 in the City of Shijak and 69 villages connected to the long transmission pipelines. Bulk water is also sold to the City of Kavaja located south of Durres. The Durres water enterprise has been the subject of numerous previous studies and is presently undergoing extensive rehabilitation under a multi-phased program with World Bank Financing. USAID has also prepared an analysis of current operating costs and water rates recommendations.

#### 1.1.2 Supply, Transmission and Storage

The water supply comes from two well fields located to the north of the City. The Fushe Kuge well field has a dependable yield of 700 liters per second and is located 40.5 km north of Durres. The second well field is located in Fushe Krugë, having a yield of 140 liters per second. The combined yield of 840 liters per second represents a daily capacity of 72.6 million liters per day (19.2 million gallons per day). After subtracting the bulk water sold to Kavaja (2.6 million liters per day) and using an average daily usage of 150 liters per day (39.6 gallons), this supply should serve a population of approximately 466,000. Since the existing population served is estimated at 200,000 the supply seems more than adequate. Figure shows a schematic drawing of the Durres water system.

Transmission pipes of 700 mm (28") and 500 mm (20") carry the water from the two well fields to the major distribution systems in Durres and Shijak. These pipelines were replaced in the 1950's and were determined to be in generally good condition with little leakage. Although the major users, Durres and Shijak, are at the end of the transmission pipelines, there are an additional 25 distribution systems connected to the transmission pipes, serving 69 villages.

### **1.1.3 Distribution**

The Durres water enterprise distributes water to individual customers through 27 separate distribution systems. These systems total approximately 165 km of pipe, and were installed in the 1930's and 1950's. They vary in size from 80 mm to 400 mm (3" to 16") and are generally in poor condition due to excessive leakage and illegal connections.



There are five, in-ground concrete storage tanks that serve the larger distribution systems in Durres and Shijak, totaling 14,200 m<sup>3</sup> (3.75 million gallons). This represents 17 percent of the average daily production capacity. The village systems do not have storage capacity, other than individual user tanks. A schematic of the supply and distribution system is shown in Figure 1.

#### **1.1.4 Existing Operation**

Due to the poor condition of the distribution systems, water lost through leakage and illegal connections is estimated at 70 percent if the distribution systems were pressurized 24 hours per day. Due to this high rate of unaccounted for water, the water distribution systems are pressurized for only 3 hours per day, usually during the early morning. Most homes, apartment buildings and businesses have small storage tanks on their roofs which are filled during this brief period of service. Many of these tanks have uncontrolled overflows which result in additional lost water. The supply pipelines are pressurized 24 hours per day.

This intermittent operation causes several related problems. The most significant is the introduction of contaminated ground water into the water pipes during the off periods. When the systems are shut off and drain down, pipes which leak under pressure will be sources groundwater infiltration when the pressure is off. This is especially serious in the higher elevations of the distribution systems which will experience negative pressures (vacuum) when the system is turned off. The director of the Durres water enterprise stated that additional liquid chlorine (four times the normal rate) is added to the water at the supply wells and storage tanks to account for this contamination source. The intermittent nature of the service also reduces the systems availability and response time for fire protection.

#### **1.1.5 World Bank Project**

A feasibility study was conducted for the Durres water system in 1993. As a result of that study, a two-phased project of rehabilitation has been started. The first phase (\$19 million) includes the rehabilitation of 60 km of distribution pipelines in Durres and Shijak and 32,000 individual user meters. The existing transmission main will also be upgraded through pressure control stations and master meters for each of the village distribution systems. In the City of Durres, the first phase work is divided into 6 zones. To date, rehabilitation of distribution pipes has been completed in only one zone. Installation of meters has not begun.

The current work under phase one of the project has identified several areas of the city where distribution extensions are needed as a result of housing development that has occurred since the feasibility study was completed. It is anticipated that these areas will be added to the phase two work. These areas are indicated on the infrastructure site map shown in Figure 2.

The original feasibility study also identified many deficiencies in the sewage collection system. Several of these problems, considered to be of an emergency nature, have been included in the





phase one World Bank project. These included the restoration of pump station No. 7 and the elimination of the raw sewage discharge to the beach area just north of the port. The phase one work also provides \$300,000 in equipment needed to clean and maintain the sewage collection system.

The second phase of the project (\$21 million) will include the rehabilitation of an additional 60 km of distribution pipelines in Durres and Shijak. The second phase will also replace all pumps and motors in the two well fields. The second phase includes a second transmission main from the Fushe Kuge well field, following a different route, closer to the shore areas. Since the existing supply yield and system demand do not appear to justify the additional transmission pipeline, this portion of the project is the subject of further evaluation. Funding and design of the second phase have not been completed.

### 1.1.6 Financing and Fees

The costs of supplying water through the Durres regional system was the subject of an Urban Services Water Rate Analysis, conducted by USAID in September, 1996. This analysis determined that there are a total of 35,701 known services in the entire system including Durres, Shijak and the 69 villages as follows:

Service Category	City	Villages	Total
Residential	30,000	4,846	34,846
Private Enterprises	623	0	623
Institutions	232	0	232
<b>TOTALS</b>	<b>30,855</b>	<b>4,846</b>	<b>35,701</b>

Current water rates are established by the Ministry of Public Works, Territory Adjustment and Tourism. These rates are 5 lek/m<sup>3</sup> for families and up to 60 lek/m<sup>3</sup> for private enterprises, and government institutions. Since there are no meters at present, residential water bills are estimated at a consumption rate of 150 liters per person per day. At present an average family of 4 pays 90 lek per month for water.

Based on 1995 figures, the revenue collected from water bills averaged 12.03 lek/m<sup>3</sup> produced, compared to an estimated cost of 26.85 lek/m<sup>3</sup>. Recommended future rates for 1997 and beyond recommend a rate structure that realizes an average revenue from all users of 30 lek/m<sup>3</sup>. If the residential rate were to triple to 15 lek/m<sup>3</sup>, an average family of four would pay 270 lek per month. The water analysis was not clear as to whether the recommended average rate includes interest and principal payments on the World Bank Loan.

In the two cities served, Durres and Shijak, water bills are paid along with the electric bills to the power enterprise. In the villages, this is not possible and rates are collected from individual users. Collection of water bills is much higher in the cities than in the villages.

### **1.1.7 Future Changes**

The government of Albania (GOA) is moving toward privatization or local self-sufficiency of all municipal services. This will have a significant impact on water enterprises throughout Albania. The current subsidy from the central government to make up the difference between costs and revenue will no longer exist. Local systems must recover the full cost of services from the system users.

In moving toward self-sufficiency, the Durres Water Enterprise intends to change its operating methods in the future. Rather than operating both supply and distribution systems for the entire distribution system, they intend to operate only the distribution systems in Durres and Shijak which are being upgraded and metered. After master meters are installed on the 25 village systems, the District system will sell bulk water to the villages, leaving operation of the local distribution systems up to local village authorities, including the collection of water bills.

## **1.2 SOLID WASTE**

### **1.2.1 General**

The collection and disposal of solid waste is one of five enterprises under the authority of the City of Durres Director of Public Works. As with other municipal services, the GOA, intends to decentralize its support of these services and make them self sufficient in the near future.

### **1.2.2 Collection**

The City is divided into two collection zones. Zone A, including approximately 60% of the area and population of the City, was privatized in July, 1996, after a competitive tender process. The Italian contractor collects waste from 350 containers and cleans the streets, sidewalks and open spaces in the zone. According to contract conditions, the contractor will employ 120 workers and use 2 compactor trucks to service the zone. Containers are serviced every day, 6 days per week. The contract of \$1 (US) per square meter includes 355,000 m<sup>2</sup> of streets and sidewalks and 25,000 m<sup>2</sup> of open space for a total contract of 380,000 m<sup>2</sup> or \$380,000 per year. Assuming a total city population of 120,000 the population served by Zone A is 72,000. These figures equal a monthly cost of \$1.76 per family of four, or approximately 158 lek per month for waste collection and street cleaning.

The private contract in Zone A is experiencing some technical difficulties as well as a major financial problem. The Italian contractor will be using Italian compactor trucks to collect from

1.1 m<sup>3</sup> containers. The existing city containers are not compatible with the new collection trucks. New containers have arrived in Durres but have not cleared customs. In the interim, the Italian contractor is using the City trucks to help collect in zone A. The contract can be extended up to 50% of the original area but the cost is subject to negotiation.

The City has not received any funds from the central government to pay for the private Zone A contract. According to the City public works director, the City owes the contractor over \$193,000 for services performed since July, 1996. Since the contract includes penalties for late payments, this is a critical situation. In addition to the 1996 deficit, the City may not receive any central government funds in 1997 if the GOA implements its decentralization of municipal services as scheduled.

The City cleaning enterprise is continuing to provide collection services in Zone B which includes the remaining 40% of the city. According to the public works director there are 150 containers in Zone B which are collected with 2 German compactor trucks. The City also collects waste in illegal housing development both inside and outside the yellow line, but containers are not provided. When the new contractor containers are placed in Zone A, the City will upgrade containers in Zone B and provide containers in the illegal housing zones. The City had intended to also privatize Zone B but have not awarded the contract due to its current financial problems with Zone A, and the total lack of a financing mechanism for 1997.

Although the City cleaning enterprise is facing significant problems, they are performing surprisingly well. During our 3-day visit, the waste was efficiently collected, the streets were relatively clean and we did not observe any significant informal dumping in those areas that we visited.

### **1.2.3 Disposal**

Collected waste is currently dumped in an open area, within the former swamp area, adjacent to the old fish ponds. The location is shown on Figure 2. This area was drained in the 1930's and is maintained by a flood control pump station located near the northern beach area. The disposal site is accessed by a 1 km dirt road which is in very poor condition and inaccessible during heavy rainfall. When the trucks cannot make it to the actual dumping site, they dump along the access road, which is lined on both sides with waste piles. The access road is also lined on the south side with illegal housing. An artesian (flowing) well drilled near the dumping area provides water to this illegal housing area. The well is reportedly 200 meters deep and its quality is unaffected by the dump.

The area of the dumping location is estimate from 2 to 3 hectares. The waste is dumped in piles and is not compacted or covered. Basically the site is being operated very inefficiently with only one layer or lift of waste. On the day of the inspection there were no fires in the areas but the

Director reported that fires were an occasional problem. Although there is a bulldozer on the site it was not operating.

Although specific investigations were not made, this area was reported to be underlain by extensive clay layers and not part of any aquifer recharge area. This should be confirmed with field investigations. If the clay formation is present, there is little potential for groundwater impacts from leachate contamination. Leachate that forms in the dump, will flow into the main drainage and sewage canal which flows between the dump and the former fish ponds. In the future, this main sewage canal may be pumped to a treatment facility before discharging to the sea. Environmental impacts from the dumping operation will include minor surface water impacts and air quality impacts during periods of burning.

The lack of any operational or design controls, especially compaction and covering with soil, may lead to several problems. Compaction and cover are means of controlling odors, blowing debris, insects and vermin. Compaction and daily cover will also reduce the effects of a fire. Compaction and daily cover will also permit the landfill to be more efficiently run, allowing it to be built vertically upward rather than the current uncontrolled horizontal growth.

#### **1.2.4 Waste Generation Data Base**

In order to evaluate waste collection and disposal systems, a waste generation data base (Figure 3) has been prepared for the City of Durres. Using a population of 120,000 and a growth rate of 2% per year and a waste generation of .6 kg/person/day a data base has been prepared showing was generation and estimated collection each year for a 25 year planning period. Using other variables listed at the to of the data base, the volume of waste collection and disposal has been calculated. The data base indicates a loose daily collection volume of 185 m<sup>3</sup> requiring 337 containers. Compacted volume in collection trucks is estimated at 130 m<sup>3</sup>. The data base indicates that the existing number of storage containers (500) and collection vehicles are adequate.

The second part of the data base estimates landfill requirements. Assuming 10% of the landfill volume is cover soil, the current landfill volume is 86 m<sup>3</sup> per day assuming long term densities listed in the data base. If a more efficient operation is implemented, using an average height of 8 meters, the city will require 2.31 hectares for a 5 year landfill, 4.94 hectares for 10 years and 14.59 hectares for 25 years. These areas are shown on Figure 2.

#### **1.2.6 Other Issues**

Medical waste: The City contains two hospitals. These facilities do not separate their infectious medical waste and it is dumped in the dump along with, and mixed with other City waste. This presents a significant health risk to waste collection workers and persons working at the dump

or living near it. A pathway exists for medical waste to contaminate the sewage canal and subsequently the beach area since sewage is pumped untreated into the sea.

**Waste Composition:** Since most consumable items in Albania are imported, the waste contains a lot of disposable packaging and materials. The most notable of these are plastic bottles and throwaway beer bottles. The potential of recycling these materials should be investigated. A local plastics manufacturer may be interested in recycling plastic containers into new products. Potential markets in Albania or in Italy may exist for other materials in the waste.

## **1.3 WASTEWATER**

### **1.3.1 Collection**

The wastewater collection system in Durres contains 130 km of combined sewer pipes varying in size from 200 mm pipes to 1.5 x 1.5 meter covered canals. Large open canals in the flood control area collect several discharges and drain them to the main flood control pumping station where they are pumped to the sea (see Figure 2). A second discharge near the beach and port will be eliminated when pumping station No.7 is rehabilitated by the World Bank Project.

The biggest problem with the wastewater collection system is deferred maintenance. The wastewater enterprise has no equipment, other than hand tools and it was reported that 60% of the system is blocked with silt and sand. The material has washed into the system from construction activities in the hilly areas above the town and the recent construction of telephone, power and water pipes.

One of large main collector channels is blocked causing a local over load of other collectors and Pump Station No.8. This area, which is located on Figure 2, floods during every rain.

Although the World Bank Feasibility Study addressed the wastewater collection system, they identified only the major problems which are being addressed in the first implementation phase. The system could not be completely evaluated due to the poor condition of the system. Cleaning equipment is being provided under the first phase and hopefully a more detailed evaluation can be performed once the system is cleaned and inventoried. A detailed wastewater collection map is also being completed as part of the first phase work.

### **1.3.3 Treatment**

All wastewater is discharged to the sea without treatment. Potential treatment of the wastewater was considered by the European Union but given a lower priority as compared to the City's other problems.

## **1.4 INFRASTRUCTURE SUMMARY AND RECOMMENDATIONS**

### **1.4.1 Summary**

In general the infrastructure systems are functioning in Durres at an acceptable level given the limited resources available to the City. Water is being provided to the majority of City residences of an acceptable to marginal quality. Waste is being collected in both zones of the City and the streets are generally clean. Wastewater is generally collected and transmitted to receiving waters without significant health or environmental impacts.

There are significant technical deficiencies in the water and wastewater infrastructure systems but these have generally been defined and are being addressed by existing or proposed programs. Water deficiencies in the supply, transmission and major distribution systems are being addressed by the on-going World Bank phase one program. The second phase should provide further improvements and, hopefully, a return to 24 hour potable water service in the cities of Durres and Shijak. The second phase will also address water main extensions to areas of the City where recent legal and illegal growth has occurred.

The future proposed operation of the water system may help the district water enterprise attain self-sufficiency but it will transfer operation accountability for the smaller village systems to local village governments. These village governments may not have the resources to accept those responsibilities and the quality of services may decline, and costs will increase. This is a major deficiency in the overall system that is not being addressed by any known programs.

The wastewater collection system is functioning and several emergency measures are being implemented under the phase one of the World Bank Project. A new system map and new equipment should provide the needed resources for the wastewater enterprise to perform much needed deferred maintenance and minor repairs. After these are performed, the system needs to be evaluated for existing and future capacity. An interim and long term plan for system upgrade and extensions to unserved areas is needed in the near future.

The major wastewater deficiency is a total lack of any treatment before the wastewater is discharged to the sea. Previous evaluations by various donor agencies have placed a low priority on wastewater treatment in comparison to providing clean water, wastewater collection and dependable solid waste collection. However, if Durres is to grow in the future and develop its largest natural resource, the sea, wastewater treatment should be given a higher priority. The former fish farm ponds offer a unique opportunity to use an existing resource for waste water treatment.

In addition to the above technical issues, the City of Durres is facing an enormous financial challenge in the near future when the central government decentralizes accountability for

funding local services. The highest priority issue is not the provision of municipal services but how to maintain and finance those services in the future.

### **1.4.2 Proposed Pilot Projects**

#### **Landfill Management Plan - Durres**

The existing solid waste dumping area is uncontrolled and presents a significant threat to public health through surface water contamination, air pollution and disease spread by insects and vermin. Both design controls (excavation, drainage, leachate systems) and operating controls (compaction, covering, fire prevention, record keeping) are needed to remove these potential health hazards. The proposed management plan will give the cleaning enterprise the tools and guidelines to improve the existing landfill operation. The proposed plan also will provide a replicable model of landfill management tools which are specific to local waste composition, geological conditions and weather, and are feasible within the resource limitations of local solid waste enterprises in Albania.

#### **Local Financing**

The highest priority in Durres should be given to addressing the financial accountability for reaching self sufficiency for the provision of local services. The current GOA plan for cities to become self sufficient by January 1, 1997 is unrealistic. Immediate activities should be directed at establishing a mechanism to begin collecting the new higher cleaning tax in 1997. Even though this tax is a major increase over the existing tax, and will not be welcomed by its residences, the city needs to begin this process. Secondary activities should include negotiating with appropriate GOA officials to establish a more realistic time frame for reaching self sufficiency.

#### **Other Potential Projects**

In addition to the above two projects the project team identified several other potential projects that met the general objective of our assignment but are given a lower comparative priority.

1. *Village Water Systems:* The proposed operation of the district water system will transfer responsibility and accountability of the local village water systems to local village authorities. Individually, these villages do not have the technical or management resources to accept this responsibility. A pilot project is proposed to select a group of villages and evaluate alternatives for managing their local distribution systems, either through a new communal water distribution enterprise or privatization.



2. *Wastewater collection Master plan:* The World Bank project will complete a new system map, and provide equipment to perform deferred maintenance and daily operations. A master plan is needed to re-organize the wastewater enterprise, prepare budgets and begin a short term and long term plan for cleaning and upgrading the system. Extensions to unserved areas and flooding areas should be given priority.

3. *Wastewater Treatment Study:* The former fish ponds offer a unique opportunity to construct an efficient, low cost treatment system using passive manmade wetland systems. Since the ponds exist, the system may have low capital costs and also low operating costs because of the low energy wetland treatment of the waste. A Feasibility Study should be completed to explore this in more detail, establish design flows and design parameters.

4. *Hospital Waste Management Guide:* The two hospitals in Durres do not separate their waste. This project would prepare a guideline for the separation and identification of infectious medical waste and offer alternatives for disposal including an on-site incinerator.

5. *Recycling Feasibility Study:* The Durres waste includes a lot of materials that could be recycled. A study should be completed, evaluating the quantity of these materials and potential markets in Albania, neighboring countries and Italy. An existing plastics plant in Durres may be a market for some of the plastic in the waste.

### **Proposed Pilot Project**

#### **Village Water Systems - Durres**

The proposed operation of the district water system will transfer responsibility and accountability of the local village water systems to local village authorities. Individually, these villages do not have the technical or management resources to accept this responsibility. A pilot project is proposed to select a group of villages and evaluate alternatives for managing their local distribution systems, either through a new communal water distribution enterprise or privatization. The following tasks are recommended:

Task 1 The Durres water enterprise, in cooperation with appropriate ministry and USAID officials, selects a commune or group of communes or villages to participate in the pilot project.

Task 2 USAID prepares a Feasibility Study of the pilot area including:

1. Inventory of service area:
  - Length, diameter, material and condition of the distribution network.
  - Number and type of service connections.
  - Prepare System Map
2. Plan to upgrade distribution system to acceptable levels. (Service time 8,12,24 hrs per day) Assume 5-year plan to attain 24 hour water service.
3. Prepare cost estimates for capital improvements and operating budgets for 5-year planning period.
4. Prepare financing plan to complete improvements and operate system, to include user fees and potential GOA or donor financing.
5. Evaluate 2 options with pros and cons:
  - New communal enterprise
  - Private water company
6. Recommendations

Task 3 Draft tender documents for Privatization or prepare operation and maintenance plan for new communal water enterprise.

Task 4 Implementation

**MANPOWER ESTIMATE**

		USAID Local Engineer (days)	USAID Technical Consultant (days)	Local Durres Water District
Task 1	Select pilot participants	8	2	5
Task 2	Feasibility Study	20	15	10
Task 3	Draft Tender Documents/ Operations Plan	10	10	2
	TOTALS	38	27	17
Others	Legal consultant	2		

**SCHEDULE**

Task 1      Select Participants - January 1 through January 15

This task to be performed primarily with local staff within city, Durres water District and ministry input.

Task 2      Feasibility Study - January 13 through January 31

This task to be performed by the Technical Consultant and local staff with significant input from the Durres Water District. Work to be performed during the second TDY in mid January.

Task 3      Tender Documents - March 17 through March 28

This task to be performed during third TDY after review and selection of alternatives.

Task 4      Implementation - Late Spring/early Summer 1997

## **Proposed Pilot Project**

### **Wastewater Treatment - Durres Fish Ponds**

The former fish ponds in Durres offer a unique opportunity to use an existing resource and construct a low cost, efficient wastewater treatment system which could be replicated in other portions of Albania and possibly other countries. Treatment of wastewater using manmade wetlands and lagoon systems is gaining in popularity especially where financial resources are limited. The existing former fish ponds cover an area of approximately 190 hectares and appear ideal for the implementation of a lagoon/wetland wastewater treatment system. This area may be large enough to become a regional facility including waste from Shijak and other villages that drain into the sea near Durres. A feasibility study is recommended to investigate this potential in more detail, and establish design and cost parameters for potential donor financing. The following tasks are recommended:

**Task 1 Review existing information.** An initial key subtask will be the ownership of the fish ponds and any current plans to re-activate them or use them for other purposes. This task will also review any existing reports including hydro geology of the area, wastewater master plans, etc.

**Task 2 Flow Estimates.** Since most sewers in the Durres Region are combined, a reasonably accurate estimate of wastewater flows will be required, including both wet weather and dry weather flows. This should be a regional review to include both quantity and quality (strength) of the wastewater flows.

**Task 3 Technology review.** This task will review current reference documentation on lagoon/wetland systems. Area requirements, plant types, and other applicable design parameters will be established.

**Task 4 Collection Strategy.** This task will identify all major raw sewage discharge points in Durres and the region and present collection/pumping strategies to divert raw wastewater (dry/wet weather) to a lagoon/wetland treatment system.

**Task 5 Conceptual Design.** Using the results of Tasks 1 through 4, present a conceptual design of a lagoon/wetland treatment system.

**Task 6 Cost estimates**

**Task 7 Environmental/Economic review.** This task will review both positive and negative impacts of the proposed facility, including conceptual economic benefits to the region resulting from reduced pollution, i.e. tourism.

## Task 8 Recommendations

**MANPOWER ESTIMATES**

	USAID Local Engineer (days)	USAID Technical Consultant (days)	Local Resources & Enterprises (days)
Task 1 Review Existing Data	5	3	5
Task 2 Flow Estimates	10	5	2
Task 3 Technology Review	3	5	0
Task 4 Collection Strategy	5	3	3
Task 5 Conceptual Design	5	10	3
Task 6 Cost Estimate	3	5	2
Task 7 Environmental Review	5	10	5
Task 8 Recommendations	5	5	3
TOTALS	41	46	23

**SCHEDULE**

Task 1      Review Existing Data January 1 through January 20, 1997

Task 2 to 8      Complete and Present preliminary Report January 13 through January 31, 1997

NOTE:      The above man-hour and schedule assumes a 3 person USAID consulting team consisting of a general civil engineer, a treatment process engineer and environmental engineer.

## **ANNEX B HOUSING ASSESSMENT**

## City Housing and Land Development Priorities

City and District officials indicate the following priorities:

1. Implement the Gateway Area plan
2. Upgrade the Tri Neighborhood District
3. Upgrade the Currila District
4. Complete a new city-wide master plan.<sup>1</sup> The purpose of the plan would be to provide the basis for an application to the National Territorial Adjustment Commission to expand the city boundaries (referred to as "the yellow line") and increase private land that can be used for urban non-farm purposes.

Other needs mentioned but not considered as urgent are:

Sewage treatment facilities

Removal of illegal squatter housing

## Priority Areas Identified by USAID Consultants

In addition to those needs identified by city officials, there are at least three areas of need that are apparent and that are likely to become increasingly urgent over the next several years. These include:

- A. Land use regulations.** There is a clear need to increase local administrative capacity and the development of land use regulations to respond to increasing demands for private housing development. This will become especially urgent when the boundaries of the city are enlarged.
- B. Apartment building and grounds maintenance.** The development of processes and financing mechanisms for the maintenance and improvement of existing apartment buildings is another important need. An estimated 90% of the housing stock is in such buildings, and while the individual apartments are all privately owned, neither the city or apartment owners have the responsibility for maintaining the structures or the courtyards. While city officials and residents are apparently currently preoccupied with other housing priorities, this issue is certain to become of major concern in the near future.
- C. Upgrading of illegal settlements.** While city officials indicate that their intention is to eventually forcibly remove these homes, this seems an unlikely prospect. At some point, city

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<sup>1</sup> The master plan has been prepared by the University of Danuzzio, located in Pescara, Italy. The plan is under review by the National Geographic Institute. Funds to complete the plan have been requested of Italian and European PHARE sources.

officials will realize that the settlements are permanent and need to be provided with urban services.

### **Proposed USAID Technical Assistance**

There are two projects where the priorities of the City and the terms of the MOU between the GOA converge. These are the implementation of the Gateway Area project and the upgrading of the Tri Neighborhood District. The Currila District upgrading and the master plan completion are not considered appropriate for USAID assistance. In the case of the Currila District, the housing requiring services is being sold to upper income households who are likely to be able to provide their own services; in the case of the master plan, there is no clear evidence of the urgency of the need for extending the city boundaries.

The implementation of the Tri Neighborhood District and Gateway Area projects would accomplish the following objectives:

- provide opportunities for the building of alliances between the City, District and the national government.
- provide opportunities for the expansion of the administrative capacity of the City.
- Improve the quality of residential living and protect environmentally sensitive areas by increasing the provision of infrastructure and urban services.

In addition, the projects are similar in key respects to the projects in Tirana that under the guidance of the Land Management Task Force (LMTF). Many of the survey and planning techniques pioneered by the LMTF can be applied to the proposed Durres projects; the commitment of the Ministry of Construction to contribute toward the staffing of a Durres program will assure an effective transfer of the lessons learned by the Tirana LMTF.

Since the Gateway Area is encumbered with squatter housing and the uncertain results and possible conflicts that may be generated by the restitution process, it is recommended that a minimum of effort be expended on this project, but sufficient to provide relevant assistance at such time as the encumbering issues are resolved. The proposed work program would focus on obtaining information that will enable USAID to advise on development opportunities and strategies; it is not anticipated that this project would be an appropriate focus of USAID participation in a full implementation effort.

The Tri Neighborhood District upgrading is a more appropriate focus of intensive immediate assistance since most of the housing is in place and urban services are urgently needed.



**Pilot Project**  
**Gateway Area Project Work Program**

<b>TASKS</b>	<b>RESPONSIBILITIES</b>	<b>SCHEDULE</b>
Review impacts of illegal housing and restitution a. aerial photos b. maps c. analysis	Data collection: Ministry Analysis: Ministry, USAID & District	Complete by 2/1/97
Analyze privatization options	Preliminary analysis: USAID & Ministry Review & comment: all parties	3/1/97
Develop alternative objectives and development strategy a. Process analysis b. economic impact analysis c. Legal strategy d. Management plan	Preliminary analysis: USAID & Ministry Review & comment: all parties	4/1/97

**KORCE, ALBANIA**  
**PROPOSED ACTION PLAN**  
**November 1996**

**General Situation**

Korce is the most prominent city in southeast Albania. It is located on the Korce Plain just over 50 km south of Lake Ochrid, to the west of the Morava mountains. The border crossing with Greece is less than 40 km away, and many residents have sought employment there. Historically, the area has been an important agriculture, textile, and food processing center. Coal is also mined in a neighboring area.

The City of Korce has consolidated many of its public enterprises in an effort to become more efficient at providing services. The water, sewage and roads enterprises have been combined and share joint management and operating personnel.

Housing There is some expressed demand for new housing, mostly in the form of single-family villas. Local developers/architects feel that there is a potential market for new flats in the \$18,000 to \$25,000 range, and local planners say that they are getting many requests for building permits. In contrast, a household can purchase an existing two-room flat for \$6,000 to 11,000, depending on its location and condition. New villas can run as high as \$45,000 to \$60,000; however, many units are built gradually as resources permit and can cost much less than this price range.

While growth expectations are limited, local officials believe that there is a great deal of overcrowding in existing housing which is responsible for a large pent-up demand for homes and larger apartments. Unlike some other cities, there is no intensive pressure from internal migration from remote rural areas. Instead, housing demand comes from local residents (including households in local villages) which are often financing construction with remittances. Illegal dwellings are not a problem. The waiting list includes about 2,600 homeless families, and the government estimates that an additional 2,000 families live in seriously overcrowded conditions (but are not considered homeless). The NHA, however, has only constructed about 130 to 140 units over the past four years.

The city plan was recently updated and includes substantial vacant and developable privately owned land within the yellow line. A smaller parcel of government land is available for additional NHA housing. The government is considering giving some of this land to small groups of homeless families who are participating in the new government grant and loan program for the homeless. The idea is that they could pool their resources to build flats on this land.

Two new subdivisions for single family homes are currently under development and there is interest in beginning a third. The first is referred to as "the Southeast Area." This area

was government land. About two years ago, the city subdivided the land into 174 lots ranging from 190 to 210 square meters, and sold them to individuals. About 70 to 80 homes have been built or are under construction. Infrastructure development is lagging behind the housing development. This area is in the hilly southeastern part of the city and existing water pressures are considered inadequate for multi-story buildings. The new high service reservoir, to be constructed during the first phase of a water project to be funded by the German government will increase pressure to acceptable levels, but this may take several years to construct. The City water enterprise has considered installing a temporary pumping station to serve this area until the new tank and pressure zone are constructed. Financial resources to construct this pumping station do not exist. Streets are graded but not improved and, while some new homes have managed to connect to nearby water and sewer mains, there are no lateral water or sewer lines serving the area as a whole. The remaining undeveloped plots (including some partially developed plots) have now become the subject of restitution claims, and the government is not allowing further construction on these plots.

The second subdivision is referred to as "the Cemetery Site" and consists of 137 lots of 330 square meters each and is located adjacent and down the hill from the Southeast Area. This site was owned by a group of 137 farm villagers who had been given the land under the national privatization program. Through the efforts of a local architect, the owners agreed to pool their land. The architect prepared a subdivision plan that resulted in 137 lots plus the street rights-of-way that were required by the master plan. Only two trunk sewers have been constructed to date. Construction of roads and water pipes has not begun due to a lack of financial resources. A small water main has been extended into a portion of this development but only a few public standpipes have been provided for actual use. The owners were assigned lots for ownership through a lottery process. Approximately ten of the original owners have begun to build houses. Another twenty or so have sold their lots and housing construction has begun on those as well. The architect's payment for organizing this project is an agreement with the land owners for him to be the architect for all the houses in the development.

The same architect is in the process of organizing a third subdivision, although it is unclear as to whether the city would allow the proposed subdivision because there currently is no detailed urban study for the area. The ten hectare site is located close to the first two subdivisions, and is a portion of a larger fifty hectare undeveloped area (known as the "Triangle Site") that is designated for housing in the city's master plan. In this case there are approximately fifty owners who own parcels of differing sizes and relationships to the existing and planned streets. The parcels consist of long, narrow, parallel strips of land. The owners have agreed to a land pooling arrangement similar to the Cemetery Site, but after the subdivision plan is complete, they will receive building parcels that reflect their proportional share of the entire site. The City is under considerable pressure to open this area for development but it lacks the resources to design and install the required infrastructure. A 220 mm spring fed pipeline is located along the eastern boundary of the area and could easily provide adequate water and pressure to the development. A large drainage canal is located along the northern boundary of the area which may complicate the extension of gravity sewers to serve the area. A

pump station or inverted siphon may be required to connect this area to the existing sewage collection system.

Water The water system in Korce serves an estimated population of 75,000 in the city and approximately 30 to 40 villages located along a 22 km pipeline which connects the distribution system to a spring supply. The total yield of the existing water supply is approximately 300 liters per second. At a per capita usage of 150 liters per day, this supply could serve a population of 172,800 which appears adequate for the foreseeable future. All water supplies are chlorinated at either their source or at each reservoir. The distribution system consists of two separate pressure zones fed by in-ground concrete storage tanks. Pipe sizes vary from 80 mm to 400 mm (3" to 16") and are generally in poor condition with many leaks. Leakage and unaccounted for water is estimated at 40% to 50%. Water is supplied on an average of 2 to 3 hours per day. Most users have individual storage tanks which are filled during this brief service period.

The wastewater collection system in Korce is a combined system, including both sewage and storm water in the same pipe. Since the city slopes from the base of the mountains to the river, the system operates well and there are only a few problem areas of flooding. The system includes older pipes as small as 200 mm and larger trunk sewer chambers, 1 to 1.5 meters wide. Newer construction areas are using a minimum of 400 mm concrete pipe for trunk sewers. The largest problems are in the old larger trunk sewer chambers. These are constructed with stone sides and a concrete top. The concrete tops were not constructed to support the modern traffic loads and many have collapsed into the chamber. These collapses have reduced capacity but still allows some flow to pass through.

The City's sewers discharge to surface canals at five points along the eastern boundary of the city. These canals run through agricultural fields and along roadways to the river. They are used by farmers for irrigation, especially during the dry season. The potential health impacts from direct contact with the sewage and the effects on food crops are issues of concern. The area between the eastern boundary of the city and the river is also an area of potential water recharge for the upper water aquifers. Although a surface layer of low permeability clay and fine sand should protect the aquifers from contamination, the potential of these aquifers reaching the surface could produce contamination of the upper most aquifer.

Solid Waste The collection and disposal of solid waste and street cleaning remains a separate enterprise. This enterprise is facing a major financial transition in 1997 as the provision of public services is decentralized. Although steps have been taken toward privatization, implementation has been delayed by the tender review at the national level. The collection of solid waste in Korce is well organized and efficiently operated. Waste from approximately 80% of the City is collected daily (except Tuesday) from 366 collection points. The remaining 20% is collected manually at the curbside.

The current dumping area is located about 1.5 km south east of the City center and approximately 2 km from the city's well field. It is accessed by a good to fair road. Pits are excavated in the hard clay and fine sandy soil to a depth of approximately 1.5 meters. Waste is dumped in the pits and spread by a bulldozer on an as-needed basis. The bulldozer is owned by the water and wastewater enterprise and is sometimes not available. As each pit is filled with waste, it is covered with soil and construction waste, and new pits are dug. The finished elevation is maintained at the previous ground level. At the time of our inspection, two pits were open and receiving waste. The area of these two pits was estimated at .75 Ha. The area of the dump is open and very windy. The surrounding land is littered with blown paper and plastic bags. An illegal, informal dumping area next to the active dumping area is totally uncontrolled. The City intends to clean up this area when resources are available.

### **Infrastructure Investments**

Water supply, storage and distribution deficiencies are being addressed by a rehabilitation project sponsored by a 16 million DM German Government Loan. All pumps in the well field will be replaced and the shallow wells, subject to contamination, will be drilled deeper. Distribution systems will be upgraded with a goal of attaining 24 hour service for all users in the near future. The German project will also finance the construction of the new high service storage tank which will create a third pressure zone.

The German study has identified the problem areas affecting the wastewater collection system and prioritized their rehabilitation. The first construction phase of the project will repair the three or four worst areas of trunk sewer chambers. The first construction phase of the German project will include a trunk sewer, connecting the five wastewater discharges and draining them to a single discharge located north of the City. This combined discharge will then flow northerly, approximately 2 km to the river. This area is down gradient from the well field and should not be a threat to groundwater quality. If financial resources remain after the first phase of the project, a second phase will include a study of wastewater treatment alternatives. Unfortunately this will not be determined for several years until the first construction phase is completed. No funds have been identified for the actual construction of the wastewater treatment facility.

Waste management in Korce and other regional towns was the subject of a European Union study. This was a very general evaluation, presenting general landfill siting criteria and various waste management alternatives including recycling, composting, incineration and land filling. This study recommended that the existing dump should be moved due to its close proximity to the City's well field.

### **Proposed Action Plan**

The objective of the proposed action plan is to improve access to adequate and secure housing served by basic infrastructure services in Korce, consistent with the objectives of the

MOU signed in January 1996 by USAID and the Government of Albania. Accordingly, the work program includes activities to improve the water, waste water and solid waste services available to the residents of Korce, as well as activities that increase the efficiency of land use and urban growth, and of public investments in infrastructure and housing. The action plan will provide practical, short-term solutions to existing problems in Korce in these areas. It also will help build the capacity in the medium term to improve services and to mobilize additional investments in infrastructure for new and existing housing in Korce.

The local government's priorities regarding housing, land, and infrastructure have shifted somewhat with the recent change in administration. During a workshop held in September 1996, the key problems identified by the city were:

- Providing and financing infrastructure extensions and networks for new neighborhoods
- Lack of market information to enable the city to "fairly" price land and housing
- Rehabilitation and extension of the wastewater system
- Developing the means to rehabilitate the older housing stock
- Finding a way to organize, regulate and finance preservation in the historic district - the old bazaar being of first priority
- Completion of the housing planned for the NHA housing site
- Reducing the amount of land zoned for industry
- Finding a solid waste disposal site

From among these needs, the new mayor identified the following as areas in which he would welcome assistance from USAID : (1) analysis of alternatives for a land fill; (2) analysis of options for improvements to the wastewater treatment system; (3) recommendations on a process to manage growth in the areas of the city where new development is occurring or planned to occur; and (4) advice on developing a housing program in the short-term to address the pressure generated by families on the "homeless" list.

Lack of wastewater treatment and the location of the existing landfill were cited by City officials as major problems. Their primary concern is the potential adverse impact on the existing well field. A complete review of the hydro geology of the area should be performed to confirm the geologic formations in the area of the landfill and sewage discharges. The public health impacts of both the existing landfill and the untreated sewage discharges are considerable and they should be addressed in the near future.

There was general agreement among the local government authorities on the importance of servicing both ongoing and proposed new housing developments. The city must find ways to raise resources and set priorities for infrastructure investments. There is a good opportunity to introduce more flexible subdivision regulations that should both increase the speed at which land becomes available for new housing development, and generate revenues to pay for a share of the infrastructure costs. There also is an opportunity to explore alternative solutions to pending housing needs of those families identified in the “homeless” list.

The mayor and his staff did not assign a high priority to maintaining and rehabilitating the older existing stock, or any of the other remaining problems. They seem to feel that people will “get around to it” eventually, despite warnings that there are certain kinds of problems the residents of privatized apartment buildings are unlikely to address of their own initiative. The improvement of the water system already is being addressed by the German project. The issues of inner-city historic preservation and zoning for industrial use do not conform to the areas of assistance included in the MOU between the GOA and USAID.

Consistent with the priorities identified by the local authorities in Korce and with the terms of the MOU of January 1996, the following activities are proposed:

- Activity 1: Korce Housing Development Management Project: This activity actually encompasses several city needs and priorities. A first priority is the need to provide infrastructure in the existing unplanned new housing areas in the southeast corner of the Korce, near the cemetery. The proposed assistance would help develop a cost sharing scheme to finance the services for these areas. This information also could form part of a broader residential infrastructure investment plan for the city.<sup>2</sup> A second priority is the need to develop a plan and a process to manage new housing development in the growth areas of Korce. The 50 hectare Triangle area provides a practical opportunity to develop subdivision regulations and to structure an infrastructure financing plan that could serve as a general land management model for Korce. Finally, the third priority is the need to explore options to address the needs for new housing of families in Korce, including those on the “homeless” list. The proposed subdivision regulations and infrastructure investment and financing plan for the Triangle area can provide realistic parameters to evaluate options for providing new housing within the limitations of resources available to the city and its residents. (Attachment 1 provides a detailed work plan for this activity.)
- Activity 2: Korce Landfill Feasibility Study The City of Korce is concerned about the current location of its landfill and the potential impact on the existing well field. The well field and the hydro geology of the area are complex and require evaluation before defining potential

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<sup>2</sup> The existing new housing development in the southeast of Korce is probably an unlikely candidate for international donor assistance due to the scale and nature of the upgrading needs. The areas are small and the residents appear to have relatively high-incomes. The option of seeking donor assistance should be explored in more detail as part of Activity 1.

impacts. A study is proposed to evaluate the landfill location, review hydro geology, and existing and proposed well field parameters. Included in this review will be an evaluation of previous studies by Dorch Consultants and a regional solid waste report prepared by a Belgian firm, under European Union sponsorship. After defining the existing situation and the existence or non-existence of potential threats to the well field, alternative technologies and landfill locations will be addressed. (Attachment 2 provides a detailed work plan for this activity.)



## **ATTACHMENT 1**

### **Activity 1: Korce Housing Development Management Project Activity Description and Work Plan**

The activity will be managed by a Korce Task Force convened by the city with additional representation from the district and central government. This will provide an opportunity to build an alliance among the city, district and the central government authorities and staff responsible for land management and infrastructure investments. The proposed activity is similar in key respects to the projects in Tirana that are under the guidance of the Land Management Task Force (LMTF). Many of the survey and planning techniques pioneered by the LMTF can be applied to the proposed Durres project. The commitment of the Ministry of Construction to contribute toward the staffing of a Korce Task Force will assure an effective transfer of the lessons learned by the Tirana LMTF.

This activity actually encompasses several city needs and priorities. A first priority is the need to provide infrastructure in the existing unplanned new housing areas in the southeast corner of the Korce, near the cemetery. The proposed assistance would help develop a cost sharing scheme to finance the services for these areas. This information also could form part of a broader residential infrastructure investment plan for the city. A second priority is the need to develop a plan and a process to manage new housing development in the growth areas of Korce. The 50 hectare Triangle area provides a practical opportunity to develop subdivision regulations and to structure an infrastructure financing plan that could serve as a general land management model for Korce. Finally, the third priority is the need to explore options to address the needs for new housing of families in Korce, including those on the “homeless” list. The proposed subdivision regulations and infrastructure investment and financing plan for the Triangle area can provide realistic parameters to evaluate options for providing new housing within the limitations of resources available to the city and its residents.

The key benchmarks that will serve to measure progress in achieving the objectives of the Housing Development Management Project are:

- Approval by the Korce Task Force of cost recovery/cost sharing options for financing new services in urban growth areas and of land use, subdivision and site development concepts
- Implementation of service investments and cost sharing policy in Cemetery Area
- Approval by the Korce Task Force of land use, subdivision and site development regulations and maps for Triangle Area
- Approval by the Korce Task Force of a housing strategy for the city

asks

Conduct an initial workshop for Durres and Korce on the concepts and methods of neighborhood improvement, using the Tirana experience as a model

The quantifiable measure of project impact will be the inventory existing conditions in existing housing development site and in Triangle Area. number of families who obtain access to housing with basic services, including connections to water and waste water systems and access to solid waste collection services.

Conduct survey of resident in existing development area and of families on “homeless” list

ATTACHMENT 2  
Activity 2: Korce Landfill Feasibility Study  
Activity Description and Work Plan

Develop preliminary cost estimates of providing services to existing housing in Cemetery Area and for new development in Triangle Area. Review cost recovery/cost sharing options and objectives. Review affordability implications for new housing under proposed standards and cost recovery objectives

The City of Korce is concerned about the current location of its landfill and the potential impacts on the existing well field. The well field and the hydro geology of the area are complex and require evaluation before defining potential impacts. A study is proposed to evaluate the existing landfill location, review hydro geology, and make recommendations for long term planning including, revised operating procedures, closure of the existing landfill and a new landfill site. The new site should be in an area that will have minimum impacts to groundwater and surface water. After defining the existing situation and the existence or non-existence of potential threats to the well field, alternative technologies and landfill locations will be addressed.

Apply proposed investment plan and cost sharing methods to existing development in Cemetery Area

The primary objective of the feasibility study is to determine the impacts to the existing well field, determine the relative value of the proposed renovations to the well field and whether revised operating procedure will be sufficient to protect the landfill during an interim period of operation, until a new long term landfill can be located, designed and constructed.

Develop proposed land use and subdivision regulation and map to guide private land development in the Triangle Area. Develop infrastructure investment plan.

The key benchmarks that will serve to measure the progress in achieving the objectives of the Landfill Feasibility Study are:

Review by Task Force of land use and subdivision regulations, investment plan and housing strategy for approval by authorities.

- Enterprise approves and implements interim operating plan for existing landfill

- City and Enterprise approve proposed site and related Landfill Management Plan
- City submits proposal for funding of new landfill to donors

The quantifiable measure of performance of the project impact will be transition of the current uncontrolled dump to a controlled sanitary landfill (interim plan) and the location of a new long term landfill site.

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**Tasks**

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Review data on regional hydro geology, well field and landfill

**Force: Proposed Action Plan**

**14**

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Prepare interim operating plan for existing landfill to include measures to limit leachate production, as well as estimates of remaining capacity and closure procedures

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Recommend criteria for selecting new landfill site and evaluate alternative locations that meet criteria

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Prepare draft long-term landfill management plan for new site, including preliminary design and cost estimates. Assess alternative implementation strategies.

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Prepare preliminary proposal for review by authorities

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Prepare final proposal for donor financing.

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## **ANNEX A**

### **KORCE INFRASTRUCTURE ASSESSMENT**

#### **1.1 WATER**

##### **1.1.1 General**

The City of Korce has consolidated many of its public enterprises in an effort to become more efficient at providing services. The water, sewage and roads enterprises have been combined and share joint management and operating personnel. The water system in Korce serves an estimated population of 75,000 in the City and approximately 30 to 40 villages located along a 22 km pipeline which connects the distribution system to a spring supply. A German funded study has been completed in Korce and rehabilitation of the water and sewer systems is being implemented.

##### **1.1.2 Supply**

Water supply comes from a combination of groundwater wells and a small spring. The well field is located 2 to 3 kilometers west of the City, on both sides of the Dunavacit River. This is shown on the Infrastructure Site Map, in Figure 1. According to the hydro geologic map of Albania, this area is rich in groundwater resources. The well field includes 18 individual wells, of differing sizes and configurations. Several wells are deep, in excess of 110 meters and are of excellent quality, while others are shallow, approximately 40 meters deep. Some of the wells are artesian, flowing wells. All wells pump or flow by gravity to a central pumping station, where large pumps pump the water through two 400 mm (16") transmission mains, to the City. The yield of the combined well field is 220 to 300 liters per second.

A second water supply source is a spring, located at the base of the mountains, 22 km southwest of the City. The yield of this source varies according to weather condition and usage along its 22 km length by approximately 30 small villages. Maximum flows reaching the City during the winter are approximately 60 liters per second but this drops to 5 to 10 liters per second in the summer and is not considered a dependable source during the peak demand periods. The steel pipe is only 225 mm (9") in diameter.

The total yield of the supply is approximately 300 liters per second. At a per capita usage of 150 liters per day, this supply could serve a population of 172,800 which appears adequate for the foreseeable future. All water supplies are chlorinated at either their source or at each reservoir.

##### **1.1.3 Water Supply Aquifer**

Previous studies have suggested that the well field is in danger of contamination from a variety of sources including the solid waste landfill and wastewater discharges from the city. As mentioned in Section 1.1.2, this aquifer is rich in groundwater. It consists of 7 water bearing

aquifers, separated by layers of low permeability clays, silt and fine sands. The uppermost formation is a clay and fine sand formation with very low permeability which is approximately 14 meters thick at the well field. As stated above, the existing wells are installed at various depths from 40 to 110



meters deep. Existing information suggests that the valley formations are not level and gradually rise in an easterly direction. Therefore several of the upper aquifer formations may reach the surface in the vicinity of the urban city areas and the landfill. Since most of the data has been obtained from drilling the wells at the well field, the data is not conclusive as to where or if the upper aquifers reach the surface.

All seven water bearing formations receive their primary recharge from an area of highly permeable gravel and rock debris at the base of the mountains which form the valley. Due to the low permeability of the formations which separate the aquifer layers, recharge from the valley floor is minimal. Although the potential exists for the contamination of the uppermost aquifers by the landfill and sewage discharges, this potential is low.

A more significant threat to the aquifers is the uncontrolled and unregulated drilling of new wells. With the problems associated with extending infrastructure to new housing areas and remote villages, many new wells are being drilled. Since there are no regulations or technical specifications controlling these wells, many are being installed improperly, without adequate sealing of the well casing with cement grout. This allows contaminated water from the surface or upper aquifers to leak into the lower aquifers. The number of uncontrolled wells is reported to be several hundred in the area around Korce. This is a significant threat to the lower aquifers and should be addressed at the national level.

#### **1.1.4 Transmission and Storage**

Water is pumped from the main well field pumping station to the city through two 400 mm pipelines. One pipeline provides 24 hour service to the industrial and commercial area and the second pumps directly to a 2,000 m<sup>3</sup> storage tank serving the lowest level of the distribution system. A pumping station at the 2,000 m<sup>3</sup> tank pumps to a higher 5,000 m<sup>3</sup> tank serving a second pressure zone. The existing spring is piped into the 5,000 m<sup>3</sup> tank. A third higher level tank is proposed for the future which will feed the higher elevations of the City, where future growth is expected.

#### **1.1.5 Distribution**

As stated above, the distribution system consists of two separate pressure zones fed by in-ground concrete storage tanks. Pipe sizes vary from 80 mm to 400 mm (3" to 16") and are generally in poor condition with many leaks. Leakage and unaccounted for water is estimated at 40% to 50%. Water is supplied on an average of 2 to 3 hours per day. Most users have individual storage tanks which are filled during this brief service period.

#### **1.1.6 German Study**

Water supply, storage and distribution deficiencies are being addressed by a rehabilitation project sponsored by a 16 million DM German Government Loan. All pumps in the well field will be replaced and the shallow wells, subject to contamination, will be drilled deeper.



Distribution systems will be upgraded with a goal of attaining 24 hour service for all users in the near future. The German project will also finance the construction of the new high service storage tank which will create a third pressure zone.

## **1.2 SOLID WASTE**

### **1.2.1 General**

The collection and disposal of solid waste and street cleaning remains a separate enterprise. This enterprise is facing a major financial transition in 1997 as the provision of public services is decentralized. Although steps have been taken toward privatization, implementation has been delayed by the tender review at the national level.

Waste management in Korce and other regional towns was the subject of a European Union study. This was a very general evaluation, presenting general landfill siting criteria and various waste management alternatives including recycling, composting, incineration and land filling. This study recommended that the existing dump should be moved due to its close proximity to the City's well field.

### **1.2.2 Collection**

The collection of solid waste in Korce is well organized and efficiently operated. Waste from approximately 80% of the City is collected daily (except Tuesday) from 366 collection points. The remaining 20% is collected manually at the curbside. This curbside collection is in the older sections of the City, where narrow streets prohibit collection of containers with large compactor trucks. Of the 366 collection points, 166 are metal containers and 200 are concrete chambers. The cleaning enterprise has prepared a map showing the location of all collection points. Existing collection equipment includes 2 compactor trucks, 4 none compaction trucks, used also for road maintenance, and two street washing machines (spray only).

Earlier this year, the City prepared and issued a tender for privatizing the entire collection system. The tender included the transfer (leasing) of all cleaning resources to the private contractor, including all vehicles, trucks, containers and depot facilities. The contractor is required to provide two new compactor trucks, 200 new metal containers to replace the existing concrete chambers and 200 smaller litter containers in the commercial areas. The tender prices are based on the surface area to be serviced, which was defined in the tender documents as 510,000 m<sup>2</sup>. The contractor is responsible for all waste collection and street cleaning in the defined area, as well as operation of the landfill.

The City received two tenders, one from an Albanian company for \$.64 (USD) or approximately \$350,000 (USD) and \$.94 (USD), approximately \$470,000 (USD) from an Italian Company. City officials have stated that the tenders are now being reviewed by the Ministry while other sources indicate that the tenders have been rejected. The Albanian tender was submitted by a local joint venture, with 51% ownership by a small local construction company and 49%

ownership by group that includes several former public works enterprise managers. The City officials do not feel that the local company has the financial resources or the experience to fulfill the contract and prefer that the contract be awarded to the Italian company.

### 1.2.3 Disposal

The current dumping area is located about 1.5 km south east of the City center and approximately 2 km from the City's well field (see Figure 1). It is accessed by a good to fair road. Pits are excavated in the hard clay and fine sandy soil to a depth of approximately 1.5 meters. Waste is dumped in the pits and spread by a bulldozer on an as-needed basis. The bulldozer is owned by the water and wastewater enterprise and is sometimes not available. As each pit is filled with waste, it is covered with soil and construction waste, and new pits are dug. The finished elevation is maintained at the previous ground level. At the time of our inspection, two pits were open and receiving waste. The area of these two pits was estimated at .75 Ha.

The area of the dump is open and very windy. The surrounding land is littered with blown paper and plastic bags. An illegal, informal dumping area next to the active dumping area is totally uncontrolled. The City intends to clean up this area when resources are available. The dumping area is also the apparent food source for a small pig farm. Approximately 25 pigs were grazing on the dump during our inspection.

### 1.2.4 Waste Generation

Waste generation and composition in Korce were included in the European Union Study. This study used typical European reference data and applied them to Korce and other Cities in the region. They used a population base of 75,000 and a waste generation figure of .9 kg/person/day to estimate a daily generation of approximately 70 tons per day. The .9 kg/person/day is a high figure for Korce, considering its present economic condition. This generation figure would be appropriate for a European city with a population of 75,000 with a strong industrial and commercial based, but it is not appropriate for current conditions in Korce. Based on reference data from developing countries, a per capita generation figure of .6 kg/person/day would be more appropriate.

In order to evaluate waste collection and disposal systems, a waste generation data base (Figure 2) has been prepared for the City of Korce. The data base assumes a population of 75,000, a growth rate of 1.75% per year and a waste generation of .6 kg/person/day. The data base has been prepared showing waste generation and estimated collection each year for a 25 year planning period. Using other variables listed at the top of the data base, the volume of waste collection and disposal has been calculated. The data base indicates a loose daily collection volume of 116 m<sup>3</sup> requiring 210 containers. Compacted volume in collection trucks is estimated at 81 m<sup>3</sup>. The data base indicates that the existing number of storage containers (366) and collection vehicles are adequate.



The second part of the data base estimates landfill requirements. Assuming 10% of the landfill volume is cover soil, the current, 1996 landfill volume required is 54 m<sup>3</sup> per day assuming long term densities listed in the data base. If a more efficient operation is implemented, using an average height of 8 meters, the city will require 1.44 hectares for a 5 year landfill, 3.05 hectares for 10 years and 8.83 hectares for 25 years.

### **1.2.5 Other Issues**

Medical waste generated at the City hospital is dumped on site and burned periodically. This practice can lead to significant air pollution in the immediate area and should be discontinued. A strategy of waste separation and appropriate labeling should be initiated. Methods of disinfecting the medical wastes prior to land filling should be investigated. A separate area, specifically marked, should be constructed at the landfill for burial of medical wastes. Long term solutions should consider a medical waste incinerator at the hospital.

## **1.3 WASTEWATER**

### **1.3.1 Collection**

The wastewater collection system in Korce is a combined system, including both sewage and storm water in the same pipe. Since the city slopes from the base of the mountains to the river, the system operates well and there are only a few problem areas of flooding. The system includes older pipes as small as 200 mm and larger trunk sewer chambers, 1 to 1.5 meters wide. Newer construction areas are using a minimum of 400 mm concrete pipe for trunk sewers.

The largest problems are in the old larger trunk sewer chambers. These are constructed with stone sides and a concrete top. The concrete tops were not constructed to support the modern traffic loads and many have collapsed into the chamber. These collapses have reduced capacity but still allows some flow to pass through.

The German study has identified these problem areas and prioritized their rehabilitation. The first construction phase of the project will repair the 3 or 4 worst areas of trunk sewer chambers.

Due to the sloping nature of the City, flooding is not a major problem. Several areas of surface ponding during rainfall were identified in the area around City Hall and the market. This is primarily the result of insufficient catch basins to drain the surface waters into the sewer pipes. In general the sewage system has adequate flow capacity.

### **1.3.2 Treatment**

The City's sewers discharge to surface canals at five points along the eastern boundary of the city. These canals run through agricultural fields and along roadways to the river. They are used by farmers for irrigation, especially during the dry season. The potential health impacts from direct contact with the sewage and the effects on food crops are issues of concern.

The area between the eastern boundary of the city and the river is also an area of potential water recharge for the upper water aquifers. Although a surface layer of low permeability clay and fine sand should protect the aquifers from contamination, the potential of these aquifers reaching the surface could produce contamination of the upper most aquifer.

The first construction phase of the German project will include a trunk sewer, connecting the five wastewater discharges and draining them to a single discharge located north of the City. This combined discharge will then flow northerly, approximately 2 km to the river. This area is down gradient from the well field and should not be a threat to groundwater quality.

If financial resources remain after the first phase of the project, a second phase will include a study of wastewater treatment alternatives. Unfortunately this will not be determined for several years until the first construction phase is completed. No funds have been identified for the actual construction of the wastewater treatment facility.

## **1.4 NEW DEVELOPMENT**

Two areas of potential development have been identified by the City in the southeast sector near the existing cemetery. Construction of homes has begun in an area east of the cemetery. This area has a development plan, including a road network but only two trunk sewers have been constructed to date. Construction of roads and water pipes has not begun due to a lack of financial resources. A small water main has been extended into a portion of this development but only a few public standpipes have been provided for actual use.

This area is in the hilly southeastern part of the City and existing water pressures are considered inadequate for multi-story buildings. The new high service reservoir, to be constructed during the first phase of the German project will increase pressure to acceptable levels, but this may take several years to construct. The City water enterprise has considered installing a temporary pumping station to serve this area until the new tank and pressure zone are constructed. Financial resources to construct this pumping station do not exist.

The second development area is known as the "triangle area" due to its triangular shape. This area is mostly undeveloped private land, inside the yellow line. The City is under considerable pressure to open this area for development but it lacks the resources to design and install the required infrastructure. The 220 mm spring fed pipeline is located along the eastern boundary of the area and could easily provide adequate water and pressure to the development.

A large drainage canal is located along the northern boundary of the area which may complicate the extension of gravity sewers to serve the area. A pump station or inverted siphon may be required to connect this area to the existing sewage collection system.

## **1.5 INFRASTRUCTURE SUMMARY AND RECOMMENDATIONS**

### **1.5.1 Summary**

The infrastructure systems in Korce are functioning at an acceptable level. The City has consolidated its enterprises and the management is very competent. Major deficiencies in the water supply and distribution systems, and the wastewater collection systems are being addressed by the German rehabilitation project.

Existing solid waste collection is well organized, and efficiently managed and operated. Plans to privatize the entire waste enterprise have been delayed due to the national review of tenders. It appears likely that the tender process may have to be repeated.

Major deficiencies in the lack of wastewater treatment and the location of the existing landfill were cited by City officials as major problems. The primary concern over these two deficiencies is their potential impacts to the existing well field. Since the area of the landfill and existing five wastewater discharges is reportedly underlain by a layer of low permeability clay and fine sand, the potential for contamination of existing aquifers may be minimal. The planned rehabilitation of the well field includes increasing the depth of existing wells, accessing deeper aquifers, which will reduce the potential of aquifer contamination. A complete review of the hydro geology of the area should be performed to confirm the geologic formations in the area of the landfill and sewage discharges.

Although the existing landfill and wastewater discharges may not constitute a major threat to the existing aquifers, the public health impacts are considerable and they should be relocated in the near future.

### **1.5.2 Recommendations**

#### **Sewage Treatment Study**

The existing wastewater collection system discharges untreated combined sewage at 5 separate locations. These discharges travel in small open drainage ditches through agricultural land to the river. The areas of the existing discharges are reported to be in the recharge area of the existing City water supply well field. The existing German funded project will connect the five discharges via a long trunk sewer, discharging them at a single point, northeast of the city and down gradient of the area believed to be aquifer recharge land. If funds are available, the German consultant will also evaluate treatment alternatives but it is not likely that any funds will remain after implementing the first phase water and sewer system rehabilitation. The proposed Sewage Treatment Study will address the systems needed to convey the wastewater to the river and provide conceptual wastewater treatment alternatives. The goal will be to define the issues in sufficient detail to qualify for donor or GOA funding. Since favorable areas for a future landfill may be in the same area of the proposed treatment facility the two facilities should be combined in terms of land requirements.

**Landfill Feasibility Study**

The City of Korce is concerned about the current location of its landfill and the potential impact on the existing well field. The well field and the hydro geology of the area are complex and require evaluation before defining potential impacts. A study is proposed to evaluate the landfill location, review hydro geology, and existing and proposed well field parameters. Included in this review will be an evaluation of previous studies by Dorch Consultants and a regional solid waste report prepared by a Belgian firm, under European Union sponsorship. After defining the existing situation and the existence or non-existence of potential threats to the well field, alternative technologies and landfill locations will be addressed.

## **Proposed Sewage Treatment Study - Korce**

The existing wastewater collection system discharges untreated combined sewage at 5 separate locations. These discharges travel in small open drainage ditches through agricultural land to the river. The areas of the existing discharges are reported to be in the recharge area of the existing City water supply well field. The existing German funded project will connect the five discharges via a long trunk sewer, discharging them at a single point, northeast of the city and down gradient of the area believed to be aquifer recharge land. If funds are available, the German consultant will also evaluate treatment alternatives but it is not likely that any funds will remain after implementing the water and sewer system rehabilitation. The proposed Sewage Treatment Study will address the systems needed to convey the wastewater to the river and provide conceptual wastewater treatment alternatives. The goal will be to define the issues in sufficient detail to qualify for donor or GOA funding. Since favorable areas for a future landfill may be in the same area of the proposed treatment facility the two facilities should be combined in terms of land requirements. The following tasks are recommended:

Task 1            Review existing data including the German Studies on wastewater quantities and design of the connecting trunk sewer.

Task 2            Evaluate land ownership in the area of the proposed wastewater discharge and identify large parcels of public or private lands.

Task 3            Present technical treatment alternatives consisting of primary and secondary systems suitable to current economic conditions. Alternatives shall include low cost, passive systems as appropriate, such as lagoons, manmade wetland systems, and water reuse through irrigation.

Task 4            Environmental impacts. This task shall assess the relative environmental impacts of the various alternatives to human health and water resources down gradient of the site.

Task 5            Present alternatives to the City and appropriate GOA officials for input, evaluation and selection.

Task 6            Preliminary design of selected alternative.

Task 7            Cost estimates.

Task 8            Review by City and GOA.

Task 9            Financing

Task 10          Final Design



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Task 11	Tendering
Task 12	Construction
Task 13	Start-up

<b>Manpower Estimate</b>		USAID Local Engineer (days)	USAID Technical Consultant (days)	Local Cleaning Enterprise (days)
Task 1	Review Existing Data	10	5	5
Task 2	Land Ownership	10	0	10
Task 3	Technical Alternatives	5	15	0
Task 4	Environmental Impacts	5	5	5
Task 5	Present Alternatives	3	3	2
	SUB TOTAL	35	28	22
Task 6	Preliminary Design	15	20	2
Task 7	Cost Estimates	3	5	3
Task 8	Review by City and GOA	10	0	5
Task 9	Financing	5	15	5
Task 10	Final Design	30	60	10
Task 11	Tendering	15	15	10
Task 12	Construction/Supervision	75	25	25
Task 13	Start-up/Training	50	15	25

NOTE: It is assumed that USAID funding would terminate at the end of Task 5. Manpower estimates for tasks 6 through 13 are rough estimates and will change based on the actual technology selected and implementation strategies.

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**Schedule**

Task 1	Review Data	January 1997
Task 2	Evaluate Land Ownership	January 1997
Task 3	Technical Alternatives	Feb-Mar 1997
Task 4	Environmental Impacts	March 1997
Task 5	Present Alternatives	April 1997
Task 6	Preliminary Design	June 1997
Task 7	Cost Estimates	June 1997
Task 8	Review by City and GOA	June-July 1997
Task 9	Financing	July-Aug 1997
Task 10	Final Design	Fall/Winter 1997
Task 11	Tendering	Winter 1997/98
Task 12	Construction	Spring 1998
Task 13	Start-up/Training	Summer 1998

**ANNEX B**  
**HOUSING ASSESSMENT**  
**KORCE**

## **Local Government Priorities**

The government's priorities regarding housing, land, and infrastructure have shifted somewhat with the recent change in administration. During a workshop held in September 1996, the key problems identified by the city were:

- o providing and financing infrastructure extensions and networks for new neighborhoods
- o lack of market information to enable the city to "fairly" price land and housing
- o rehabilitation and extension of the wastewater system
- o developing the means to rehabilitate the older housing stock
- o finding a way to organize, regulate and finance preservation in the historic district - the old bazaar being of first priority
- o completion of the housing planned for the NHA housing site
- o reducing the amount of land zoned for industry
- o finding a solid waste disposal site

Of the above, the new mayor concurs with: (1) the need for a land fill; (2) improvements to the wastewater system; (3) supporting infrastructure in the newer developments; and (4) completing housing on the NHA site. He and his staff did not assign a high priority to maintaining and rehabilitating the older existing stock, or any of the other remaining problems. The prior mayor was much more supportive of efforts to organize condominiums.

## **Priority Areas Identified by USAID Consultants**

There was general agreement with the government that servicing new developments is a priority. The city must find ways to raise resources and set priorities for infrastructure investments. There is a good opportunity to introduce more flexible subdivision regulations that should both increase the speed at which land becomes available for new housing development, and generate revenues to pay for a share of the infrastructure costs.

The importance of maintaining the older existing stock is not a view that is shared by the new government. Maintaining the existing stock will delay the need for new construction and potentially offer benefits to a much larger share of the population than new construction-oriented programs. The government feels people will "get around to it" eventually, despite warnings that there are certain kinds of problems that people are unlikely to be able to resolve among themselves.

## **Proposed Technical Assistance**

Subdivision Regulation - The government needs to learn how to facilitate rather than hinder private sector development. The current rules governing housing development are too strict; development cannot proceed without the government preparing detailed urban studies showing the exact layout of buildings. Technical assistance needs to focus on the process of establishing objectives and targets, overcoming institutional and administrative obstacles, and coordination among local, regional and national agencies. The coordination assistance may encompass the identification of needed modifications in laws and regulations at the local or national levels of government and assistance in achieving such modifications.

An opportunity for making such institutional modifications is presented by the City's interest in encouraging the development of the 50 hectare Triangle area. The development of subdivision regulations and structuring of development fees in relation to the Triangle area is a high city priority and a relatively low cost technical assistance area that USAID can provide.

Infrastructure Upgrading - Korce is probably an unlikely candidate for international donor assistance due to the scale and nature of its upgrading needs (i.e., the areas are small and relatively high-income). Some limited assistance can be provided to develop preliminary cost estimates and to devise a cost sharing scheme for the neighborhoods located near the cemetery. This information could then be used as part of a broader infrastructure investment plan for the city.

**ELBASAN, ALBANIA**  
**PROPOSED ACTION PLAN**  
**November 1996**

## **General Situation**

Elbasan occupies a spot in central Albania in the Shkumbini river valley. Under communist rule, the city was an important industrial center that was connected to the port city of Durres by the Via Egnatia. Among Albanians, Elbasan is a symbol of what was wrong with Hoxha-style industrial development. An enormous, largely defunct, metal ore processing plant dominates the western outskirts of the city. Urban growth is constrained by agricultural areas and mountains to the north, mountains to the east, the river to the south, and the ore processing plant on the west. A buffer zone separates the city from the plant.

Elbasan is a city of about 110,000 people, although like many other cities, a precise figure is not known because of recent internal and international migration. The local economy is suffering due to the reduction of work at of the ore processing facility, and unemployment is high, particularly among skilled workers. The high unemployment has caused people to leave, but the arrival of local villagers, attracted by relatively better job prospects as laborers and by better services, has been offsetting population losses in recent years.

Housing There are about 1,600 illegal residential structures and additions in and around the city. A combination of incoming villagers and city residents are largely responsible for illegal construction. Illegal units have primarily appeared in areas that were perceived to be state-owned land. As land has been restituted to former owners, the growth in the number of new illegal units has slowed. Several government officials believe that illegal construction is a national government issue, and they will implement any instructions they receive regarding such construction. Most believe that if a structure is well-built, located in a residential zone, and does not block rights of way, then it should be allowed to stand. Others will need to be removed. One possibility mentioned is that families might be consolidated into flats so their units can be removed.

Most illegal units are located on the periphery of the city on both sides of the yellow line. By choosing locations near existing access roads and infrastructure, many occupants of informal housing have been able to tap into the water and electricity systems. They are known to be responsible for some of the leaks in the water system. Some units are located in fairly dense settlements suggesting that inadequate sanitation facilities may be a problem.

Unlike some fast growing cities, illegal construction is not a sign of a broad-based intense demand for housing. There is a plentiful supply of existing units which has resulted in prices as low as \$10,000 to \$15,000 in the city center for a two-room unit. Low existing unit prices make the price of newly constructed units unattractive. For example, an NHA unit costs about \$11,000 to build (which, presumably does not include land costs and has a minimal profit

element). With the exception of a small number of villas, the local housing market is not very attractive to local developers. At least one local firm has opened an office in Tirana where most of its business is located. The effective demand is low in Elbasan despite low construction costs. Elbasan has low wages and produces its own cement, gravel, brick, and steel.

Urban Growth The city planners believe Elbasan will grow in the future, and have produced urban studies for several areas. One site known as "Belarbe" consists of farmland located southeast of the city across the railroad tracks. The city and district requested permission from the National Territorial Adjustment Committee to extend the yellow line to include this area, but their request was turned down, in part, because this area includes some olive trees. An inspection of this site revealed that this area has large wide open spaces that are free of trees. A corner of this site is occupied by about 200 squatters, but now that this site has come under private ownership, illegal building has been curtailed.

Another urban study has been prepared for a site located near the hospital in the northeastern part of the city, just north of the area where most of the NHA construction has taken place. Much of this seven hectare site, however, has been occupied by roughly seventy illegal structures. This land is now mostly privately owned and there are some requests from owners to build on this land. Many roads in this part of the city (known as "5 Maji") are unsurfaced or in poor condition. A third urban study area is on the western edge of the city. It is similar to the hospital area with regard to problems.

There is a modest backlog with respect to servicing formally developed units. The city planning director guessed that this backlog might consist of about 200 units. He felt that the city would get around to servicing them eventually, and that this was not a major problem. If illegal settlements are to be upgraded, they would receive a lower priority than legal developments. The Skanderberg area is a newly developed area of mostly single family homes that the city has successfully serviced.

The main source of demand for new construction is the government. Some of this has been NHA housing (about 80 flats in the last two years), but the other main financing source has been relocation assistance for households displaced by a hydroelectric power project (about 90 flats in the last two years). The waiting list includes roughly 2,500 families. About 250 of them live in units that have been reclaimed by former owners. Another 200 or so are on the list as the result of divorces. About 300 families live in non-residential spaces such as commercial properties, cellars, and kindergartens. Of the remaining homeless, roughly 300 families are renters, and the rest are mostly overcrowded households.

There are no major constraints to private sector development except for the usual over planning of undeveloped sites by the government. There are over eighty construction firms, and at least three study design companies. There seems to be a bit of controversy as to whether private sector companies are always allowed to enter into design competitions for certain public projects (the government has its own design bureau which "competes" with private firms).

The maintenance of the existing privatized stock (which housed about 80,000 people in 1989) is recognized by officials as a problem, but they are not doing anything about it. They are aware of condominium legislation, but are not actively trying to implement any aspect of it (they are awaiting some kind of national government action). They point out that they are having trouble even maintaining schools, and feel that there is little they can do right now about the flats. They also note that the biggest barrier is a psychological one (a barrier that will eventually be overcome since people are beginning to realize that the city has taken on "a bad look"). Not only are people somewhat reluctant to cooperate--they are also being asked to pay more in a context where they recently have been asked to pay a lot more taxes and fees. People are paying for maintenance on an as-needed basis. One interesting note: a state enterprise that is responsible for maintaining roads, sidewalks, and other facilities is willing to paint the common areas of buildings and charge households by adding the cost to their electric bills.

The World Bank consultants conducting the study of the water system in Elbasan have identified the residential buildings in the city as the single largest source of unaccounted water. The consultants metered a few buildings and found that per capita water consumption is three times higher than anticipated. They explain this by pointing to numerous leaks in existing fixtures and possibly in the pipes in the building itself. This would mean that any investment in fixing the water distribution system outside the buildings will not be fully successful, since there still would be substantial water loss inside the buildings.

Water The Elbasan water enterprise services a regional system composed of the City of Elbasan, the village of Cerrik, located 12 km from Elbasan, and approximately 15 small villages. The central supply and distribution system serves a population of approximately 120,200 and an additional 25,000 are served by separate supply systems in Cerrik and 3 other small villages. Water is fed into the distribution network three times per day for an average service time of approximately 6 to 7 hours per day. Most homes have a small roof top storage container that provides water during the off period times. The combination of 3 service periods and the individual storage appears adequate to meet most of the water users needs. Although the distribution system is pressurized only 6 to 7 hours per day, some users have a longer service time because they are located on the low end of the system or on the ground floor of an apartment building. The upper floors receive the shortest service time. This difference in service time is taken into account when bills are sent out for water service. The largest problem in the Elbasan distribution system is unaccounted for water (lost water) from leaks or poor use habits, estimated at 60% to 70%. The water enterprise staff estimates that only 20% to 25% of the lost water is due to technical deficiencies in the system, (leaks) while the remaining 75% to 80% is due to misuse and illegal connections.

Wastewater The Elbasan wastewater collection system includes an estimated 95 km of pipe. The documentation of the existing system is very limited. The only map of the system is an old print which is worn and in poor condition. It has not been updated to include new extensions and some of the sewer pipes indicated on the map cannot be confirmed in the field. The system is being inventoried by the World Bank Feasibility Study and a new map will be prepared. The resources available to the wastewater enterprise to perform routine maintenance



and sewer extensions to new areas is very limited. The enterprise consists of 31 employees and has virtually no equipment except a few donkey carts. The operating budget is paid by the central government and is only \$2,000 per month. Initial findings from the Bank feasibility study indicate that the wastewater collection pipes are too small to convey the combined sewage that they are intended to carry. There are too few curbside basins to permit rainwater to enter the system and the pipes are barely large enough to handle the sanitary sewage but not the rainwater runoff. As a result, rainwater flows primarily in the streets, causing localized flooding problems. Fortunately the city streets were constructed with a good slope, and rainwater is able to drain from the city streets to either the river or the two major drainage canals that pass east and west of the urban area.

The existing sewage system discharges directly to the river at five points, the largest being at the existing solid waste dumping site. Total dry weather discharge is estimated at  $1 \text{ m}^3$  per second. Compared to an estimated summer flow in the river of 3 to  $5 \text{ m}^3$  there is insufficient dilution of the sewage. The resulting summer contamination of the river and associated aquifer could have a significant impact on downstream water users, including the village of Cerrik.

Solid Waste The cleaning enterprise maintains a fleet of 17 vehicles to perform its duties. These include 4 new IVECO trucks for the collection of waste and various other trucks which share responsibilities with street cleaning and maintaining the parks. According to the cleaning enterprise staff, waste is collected daily from 812 collection points totaling an estimated 100 tpd. In general, waste is shoveled into the 4 newer IVECO trucks and taken to the dumping area. The collection points are a mixture of concrete chambers, loose uncontrolled dumping piles and dumping piles surrounding the small 240 liter containers. Collection areas are not being collected in an efficient manner and uncollected waste can be observed in nearly all areas of the city.

The existing dumping area is located approximately 1.5 km from the city center, on the banks of the Shkumbini River. The site is also the outlet of the City's largest sewer outlet and a small stream runs through the site. The site is operated as an uncontrolled dump, without compaction or covering. A small bulldozer was observed at the site but was only moving waste into piles to allow trucks to access the site. Although the road from the City center to the dump site is newly paved, the access road into the site is poor and runs through a small stream before entering the working area of the dump. Some scavengers were observed on the site but the enterprise staff indicated they were not looking for any specific material but merely any object that had value. On the day of the inspection, several fires were burning at different locations in the dump. These were reported to have been set by the scavengers, hoping to expose more items of value.

## **Planned Investments**

Water and waste water The World Bank program is preparing a comprehensive evaluation and rehabilitation of the water and wastewater systems. This program will address deficiencies in the water supply and distribution systems and present operation and maintenance

strategies to maintain acceptable services. Typical rehabilitation is expected to include the replacement of all well pumps and motors, rehabilitate the distribution system and install meters on all system users. The goal of the program is to upgrade the system to 24 hour service at an affordable cost to the users. The initial World Bank Feasibility Study is under way with completion expected in March, 1997.

Solid waste A Dutch Study, completed in August 1996, concluded that the current operation of the cleaning enterprise was very inefficient from both an administrative and technical viewpoint. They made many recommendations, including the separate administration of the waste collection and parks services, and the conversion of the waste collection system to larger compactor trucks and the use of containers. This recommendation included the use of 3 compactor trucks and 500, 1.1 m<sup>3</sup> containers. In order to demonstrate their recommendations, the Dutch have recommended a pilot collection area consisting of the 1,500, 240 liter containers and 50, 1.1 m<sup>3</sup> containers, to be serviced with two large compaction trucks. According to the Public Works Director, this pilot project is scheduled to begin in January 1997, with used trucks and containers donated by a city in Holland. It is assumed that the Dutch will also include technical assistance to the city in managing the pilot collection program, but this was not defined in the study.

The Dutch study also addressed other issues in the waste collection system, including the existing and proposed landfill sites. They recommended the closure of the existing site and the construction of a new landfill at the clay pit site. They expressed concern over the highly permeable soils at the steel mill site and the potential of polluting both groundwater and the river.

Finally, the World Bank is considering expanding their project in Elbasan to include solid waste. A scope of work has been proposed and is currently under review by the Bank. The scope indicates that a very comprehensive study would be performed including waste generation, collection, and disposal. The evaluation, location and design of a new landfill are within the proposed scope of the World Bank Project but a decision has not been made by the Bank to include this work. If the Bank decides not to fund Solid Waste in Elbasan, then there will be a significant deficiency in the system. In that event, the existing landfill will continue, or the City will begin using the unused steel mill site without proper controls. Either scenario could lead to significant contamination of the river and associated groundwater aquifers.

### **Infrastructure Financing**

Starting in January 1997, the central government will eliminate all existing operating subsidies for water, waste water and solid waste services in all cities in Albania, including Elbasan. The city has taken sound steps to prepare and implement a series of measures to collect the new cleaning tax authorized by law to replace the subsidies. The water company has a history of high rates of payment of water bills by its customers. Nonetheless, neither the cleaning enterprise nor the water company have evaluated their operating costs and determined a rate structure that would ensure their financial self-sufficiency. No studies of any kind have

been prepared on the cost of waste water collection. City officials expressed a strong interest in completing rate studies and cost analyses and in implementing cost management procedures as a complement to the steps they have taken to date, mostly in the area of bill collections. Now that they will be responsible for the financing of local infrastructure services from fees and taxes, the officials have become interested in ensuring both that the enterprises are in sound financial condition and that they are operating efficiently and at reasonable costs.

### **Proposed Action Plan**

The objective of the proposed action plan is to improve access to adequate and secure housing served by basic infrastructure services in Elbasan, consistent with the objectives of the MOU signed in January 1996 by USAID and the Government of Albania. Accordingly, the work program includes activities to improve the water, waste water and solid waste services available to the residents of Elbasan. The action plan will provide practical, short-term solutions to existing problems in Elbasan in these areas.

The highest priority would be to help the city address the issue of the financial self-sufficiency and cost efficiency of local utilities providing basic infrastructure services. The amount of time and energy that the city has devoted to developing a viable system to collect the new waste cleaning tax in 1997, it is evident that the financing of utilities is of great interest to city officials. In addition, the studies prepared by World Bank consultants that show that misuse of water and existing leaks in residential and other buildings account for a large share of unaccounted water in Elbasan provides an excellent opportunity to develop a simple, practical activity to address the issue both of unaccounted water and deferred maintenance in residential buildings. As water rates increase in response to government measures to reduce operating subsidies, residents of buildings will pay a high price for the water that is being lost inside the building. This situation provides an excellent opportunity to address a problem that occurs not just in Elbasan but in all other cities in Albania. The water company has expressed an interest in exploring practical steps to address this problem.

Consistent with these priorities identified by the local authorities in Elbasan and with the terms of the MOU of January 1996, the following activities are proposed:

- Activity 1: Utility Financing Plan - This activity will help the city work with the cleaning enterprise and water company to develop and apply financial management methods and skills to become financially self-sufficient in response to the decision of the central government to discontinue all operating subsidies starting in 1997. The assistance will help local officials determine the proper rate structures to cover costs and recover investments; implement bill collection procedures; and, implement cost accounting and cost management techniques to improve service efficiency. (Attachment 1 provides a detailed work plan for this activity.)
- Activity 2: Plumbing Water Conservation Project The primary objective of this pilot project will be to document the cost effectiveness of system maintenance and behavior changes

that reduce water usage. Previous evaluations performed by the Elbasan Water Enterprise have indicated that a large percent of unaccounted for water can be attributed to misuse and deferred maintenance within housing units. The enterprise is an excellent counterpart for this pilot project because of their good organization and past record of billing and collection percentages under the current rate system. The assistance will help residents identify and correct sources of lost water and will demonstrate through metering the resulting reduction in volume of water going into the building. The expectation is that the enterprise will replicate the experience in all other buildings in Elbasan. (Attachment 2 provides a detailed work plan for this activity.)

Tasks	
<p><b>Elbasan: Proposed Action Plan</b></p> <p>Assess current costs of providing water, waste water and solid waste services. Estimate future operating costs based on implementation of any changes proposed by Dutch and World Bank consultants</p>	<p style="text-align: center;"><b>ATTACHMENT 1</b></p> <p style="text-align: center;"><b>Activity 1: Elbasan Utility Financing Project</b></p> <p style="text-align: center;"><b>Activity Description and Work Plan</b></p> <p>This activity will help the city work with the cleaning enterprise and district water company develop and apply financial management methods and skills to become financially self-sufficient in response to the decision of the central government to discontinue all operating subsidies starting in 1997. The assistance will help the enterprises determine the proper rate structures to cover costs and recover investments; implement bill collection procedures; and, implement cost accounting and cost management techniques to improve service efficiency. The improved financial and operating conditions of the enterprises will facilitate the implementation of measures to privatize all or part of the water and solid waste services in Elbasan.</p> <p>The key benchmarks that will serve to measure progress in achieving the objectives of the Water, Waste Water and Solid Waste Financing Project are:</p> <ul style="list-style-type: none"> <li>- Completed operating cost and rate structure analysis for water, waste water and solid waste services in Elbasan</li> <li>- Completed analysis of options for financing investments in infrastructure in Elbasan with resources from users and from local utility fees and taxes.</li> <li>- Approval of final recommendations on final recommendations on utility financing in Elbasan, including measures to increase revenues through revised rates and improved bill collection and to increase investments in infrastructure services.</li> </ul> <p>The quantifiable measure of project impact will be the increase in the volume of investment in infrastructure services.</p>
Recommend a rate structure for water and solid waste services consistent with existing cost structure and anticipated changes. Recommend source of financing for waste water services.	
Review current experience collecting user fees for water and solid waste services. Recommend changes, if necessary, including provisions to address non-payment. Assess options for privatization of bill collection process.	
Assess options for financing investments in water, waste water and solid waste systems and facilities, in Elbasan with resources available from users and from local utility fees and taxes.	
Prepare final recommendations on utility financing in Elbasan, including measures to increase revenues through improved bill collection and to increase investments in infrastructure services.	<p style="text-align: center;"><b>ATTACHMENT 2</b></p> <p style="text-align: center;"><b>Activity 2: Elbasan Water Conservation Project</b></p> <p style="text-align: center;"><b>Activity Description and Work Plan</b></p>
Review final recommendations with city, district and central government officials	

Previous evaluations performed by the Elbasan Water Enterprise have indicated that 75 to 80 percent of unaccounted for water can be attributed to misuse and deferred maintenance within housing units. The past practice of estimating water usage and charging a flat rate, regardless of actual usage, does not provide incentives to conserve water and reduce usage. Although the World Bank Project will address major supply and distribution infrastructure deficiencies, responsible for the other 20 to 25 percent of water loss, there is a need for a strategy to address lost water within housing units. Although the installation of individual user meters will provide an economic incentive to upgrade plumbing fixtures and alter behaviors that misuse water, this program will actually demonstrates this, to the user. The Elbasan water system is an excellent location for this pilot project because of their good organization and past record of billing and collection percentages under the current rate system.

The primary objective of this pilot project will be to document the cost effectiveness of system maintenance and behavior changes that reduce water usage. This will be accomplished by actually measuring water use before and after deferred maintenance is performed and behaviors are modified through a structured educational program. By implementing this pilot program using water enterprise staff, it can be replicated throughout the Elbasan distribution system. Another important objective is to structure the program so that it can be replicated in other cities in Albania.

Tasks	Response
Identify buildings for pilot project	Enterprise
Elbasan: Proposed Action Plan 12	USAID:
Install water meters in pilot project buildings	Enterprise
Inventory existing condition of plumbing in pilot project buildings	Enterprise
Repair or replace all leaking fixtures, after first waiting four weeks to measure water consumption in pilot project buildings	Enterprise
Repare and conduct water conservation education campaign among residents of pilot project buildings	Enterprise
Measure consumption in pilot project buildings for eight weeks following completion of repairs	Enterprise
Analyze data and summarize results of pilot projects. Prepare strategy for extending pilot activities to cover all buildings in Elbasan	Enterprise
Implement follow-on strategy and extend pilot project to all buildings in Elbasan	Enterprise

# ANNEX A ELBASAN INFRASTRUCTURE ASSESSMENT

## 1 WATER

### 1.1 General

The Elbasan water enterprise services a regional system composed of the City of Elbasan, the village of Cerrik, located 12 km from Elbasan, and approximately 15 small villages. The central supply and distribution system serves a population of approximately 120,200 and an additional 25,000 are served by separate supply systems in Cerrik and 3 other small villages. A comprehensive study was

performed for the main supply and distribution system in 1993 by a local Albanian company. More recently, a large World Bank program has begun in Elbasan that will address deficiencies in the water and wastewater systems. The Feasibility Study for this program has just begun.

## 1.2 Supply

The main water system draws its water from three well fields which are located on the Infrastructure Site Map (Figure 1). These sources are located in spring areas and are of good quality. The yield from these well fields varies with seasonal fluctuations in the water tables, from a low of 780 liters/second in the summer, to 1,230 liter/second in the winter. Since the well pumps are surface horizontal pumps, the pumping capacity is reduced with dropping groundwater levels. The World Bank program will most likely replace the existing pumps with deeper submerged pumps which should result in a more uniform yield throughout the year.

The village of Cerrik, was the location of a former oil refinery and the village has a large well yield of 260 liters/second, of which only 80 to 100 liters/second is currently utilized. Based on the well field's location along side the Shkumbini River, which is downstream of the Elbasan industrial area, there is a concern over contamination by industrial waste and other pollution sources originating in Elbasan.

Three other small villages, managed by the Elbasan water enterprise, draw their water from individual wells.

### **1.3 Water Supply Aquifers**

The Shkumbini River Valley at Elbasan is relatively narrow. Just upstream of the City, a belt of Cretaceous Limestone crosses the valley. This highly permeable formation receives water recharge from the mountains on either side of Elbasan and discharges to the sands and gravel which form the valley floor. All three of Elbasan's well fields are located in the alluvial sands and gravel over this Cretaceous Limestone deposit. These fields are fed primarily by the Limestone formation and very little recharge from the river is experienced.





The well field in Cerrik is located in the alluvial valley deposits. Although water quality is reported to be good for drinking purposes, a significant percentage of the recharge appears to come from the river. Therefore, water quality may be impacted in the future by industrial and waste disposal practices in Elbasan.

## **1.4 Transmission and Storage**

Water is pumped from the three well fields directly to two storage tanks which feed the low pressure zone including about 80% of the system. A pumping station located on the low pressure zone pumps to a third storage tank which feeds the remaining 20% of the distribution system located in the north end of the town. Water is chlorinated at the storage tanks and at the wells.

## **1.5 Distribution**

Water is fed into the distribution network three times per day for an average service time of approximately 6 to 7 hours per day. Most homes have a small roof top storage container that provides water during the off period times. The combination of 3 service periods and the individual storage appears adequate to meet most of the water users needs. Although the distribution system is pressurized only 6 to 7 hours per day, some users have a longer service time because they are located on the low end of the system or on the ground floor of an apartment building. The upper floors receive the shortest service time. This difference in service time is taken into account when bills are sent out for water service.

In addition to the basic distribution network, there is a 400 mm priority pipeline which services privileged users such as the cement factory and city services. The pipeline, known as pipeline No.9, also provides water for fire fighting and other emergency services.

The largest problem in the Elbasan distribution system is unaccounted for water (lost water) from leaks or poor use habits, estimated at 60% to 70%. The water enterprise staff estimates that only 20% to 25% of the lost water is due to technical deficiencies in the system, (leaks) while the remaining 75% to 80% is due to misuse and illegal connections. They further estimate that most of the technical leakage is coming from the smaller distribution pipelines of 3 inch diameter and less. Approximately 25% of the system is composed of pipelines from ½" to 3" in diameter.

## **1.6 World Bank Program**

The World Bank program will be a comprehensive evaluation and rehabilitation of the water and wastewater systems. This program will address deficiencies in the water supply and distribution systems and present operation and maintenance strategies to maintain acceptable services. Typical rehabilitation is expected to include the replacement of all well pumps and motors, rehabilitate the distribution system and install meters on all system users. The goal of the program is to upgrade the system to 24 hour service at an affordable cost to the users. The initial World Bank Feasibility Study is under way with completion expected in March, 1997.

## **1.7 Water Rates**

The water enterprise charges water rates that are set by the central government. Even with full payment these rates are insufficient to cover current operating costs and a central government subsidy is still required. Elbasan's approach to setting water rates within the national limits and their collection is very efficient, with an average of 92% to 93% return of payments. With the planned system improvements and reduced subsidies in the near future, the enterprises anticipates a more liberal rate setting policy from the central government.

## **2 SOLID WASTE**

### **2.1 General**

The cleaning enterprise is responsible for collection solid waste, cleaning the streets and maintaining the parks and open spaces. Total enterprise staff of 400 persons includes 210 who clean the streets and collect solid waste. In August, 1996 a study was performed, sponsored by the Dutch government. This study evaluated waste generation, collection and disposal, and included recommendations for a collection pilot project and a new landfill site.

### **2.2 Collection**

The cleaning enterprise maintains a fleet of 17 vehicles to perform its duties. These include 4 new IVECO trucks for the collection of waste and various other trucks which share responsibilities with street cleaning and maintaining the parks. There are two very old trucks that service 240 liter containers. The city has purchased 1,500, 240 liter containers to go with these trucks. Unfortunately, only one of these trucks currently functions, therefore the number of 240 liter containers which can be serviced is limited. Only 300 of the 1,500 containers are in use, with 1,200 in storage. With the exception of the older trucks, used to load 240 liter containers, all trucks are manually loaded. All trucks load and transfer waste in a loose, non-compacted state.

According to the cleaning enterprise staff, waste is collected daily from 812 collection points totaling an estimated 100 tpd. In general, waste is shoveled into the 4 newer IVECO trucks and taken to the dumping area. The enterprise staff indicated that each truck made 2 to 3 trips to the dumping area per day. The collection points are a mixture of concrete chambers, loose uncontrolled dumping piles and dumping piles surrounding the small 240 liter containers. During our two day visit, it was evident that the collection areas were not being collected in an efficient manner and uncollected waste was observed in nearly all areas of the city.

### **2.3 Disposal**

The existing dumping area is located approximately 1.5 km from the city center, on the banks of the Shkumbini River. The site is also the outlet of the City's largest sewer outlet and a small stream runs through the site. As shown on the Site Plan, the existing landfill is located less than 1 km downstream of one of the City's 3 well fields.

The site is operated as an uncontrolled dump, without compaction or covering. A small bulldozer was observed at the site but was only moving waste into piles to allow trucks to access the site. Although the road from the City center to the dump site is newly paved, the access road into the site is poor and runs through a small stream before entering the working

area of the dump. Some scavengers were observed on the site but the enterprise staff indicated they were not looking for any specific material but merely any object that had value.

On the day of our inspection, several fires were burning at different locations in the dump. These were reported to have been set by the scavengers, hoping to expose more items of value. Although an enterprise employee has the responsibility of managing the dump, including the control of scavengers, he was nowhere to be found.

The City acknowledges that the existing landfill is poorly located and is a potential source of contamination for the well field and Shkumbini River. Two alternate sites were mentioned by enterprise staff as potential new sites. One site, which was inspected during our visit is the unused portion of the ash landfill for the steel mill complex, which is no longer functioning. This site is also adjacent to the river, but is approximately 5 km downstream of the nearest Elbasan well field. The site is large, 10 Ha, and surrounded by an 8 meter dike, resulting in a potential capacity of approximately 800,000 m<sup>3</sup>. The site is located in coarse sand and gravel and would obviously be a potential contamination source for the river and local groundwater.

The second potential landfill site was reported to be a former clay pit for the City's brick factory and is 4 Ha by 15 to 20 meters deep. This site was not observed during our visit. Both sites are shown on the Site Map.

## 2.4 Waste Generation

Previous studies have included an estimate of waste generation in Elbasan of 100 tpd using a waste generation coefficient of 1.0 kg per person per day. The 1.0 kg value is a high figure for Elbasan, considering its present economic condition. This generation figure would be appropriate for a European city with a population of 100,000 with a strong industrial and commercial based, but it is not appropriate for current conditions in Elbasan. Based on reference data from developing countries, a per capita generation figure of .6 kg/person/day would be more appropriate.

In order to evaluate waste collection and disposal systems, a waste generation data base (Figure 2) has been prepared for the City of Elbasan. The data base assumes a population of 107,600, a growth rate of 3.00% per year and a waste generation of .6 kg/person/day. The data base has been prepared showing waste generation and estimated collection each year for a 25 year planning period. Using other variables listed at the top of the data base, the volume in cubic meters of waste collection and disposal has been calculated. The data base indicates a loose daily collection volume of 166 m<sup>3</sup> requiring 302 containers (daily collection). Compacted volume in collection trucks is estimated at 116 m<sup>3</sup>.

The second part of the data base estimates landfill requirements. Assuming 10% of the landfill volume is cover soil, the current, 1996 landfill volume required is 77 m<sup>3</sup> per day assuming long term densities listed in the data base. If a more efficient operation is implemented, using an average height of 8 meters, the city will require 2.11 hectares for a 5 year landfill, 4.64 hectares for 10 years and 14.90 hectares for 25 years.

Based on this calculation, the unused steel mill ash landfill would have a 19 year capacity and the former clay pit would have a 15 year capacity.

## **2.5 Dutch Study**

The Dutch Study, completed in August 1996, concluded that the current operation of the cleaning enterprise was very inefficient from both an administrative and technical viewpoint. They made many recommendations, including the separate administration of the waste collection and parks services, and the conversion of the waste collection system to larger compactor trucks and the use of containers. This recommendation included the use of 3 compactor trucks and 500, 1.1 m<sup>3</sup> containers.

In order to demonstrate their recommendations, the Dutch have recommended a pilot collection area consisting of the 1,500, 240 liter containers and 50, 1.1 m<sup>3</sup> containers, to be serviced with two large compaction trucks. According to the Public Works Director, this pilot project is scheduled to begin in January 1997, with used trucks and containers donated by a City in Holland. It is assumed that the Dutch will also include technical assistance to the City in managing the pilot collection program, but this was not defined in the study.

The Dutch study also addressed other issues in the waste collection system, including the existing and proposed landfill sites. They recommended the closure of the existing site and the construction of a new landfill at the clay pit site. They expressed concern over the highly permeable soils at the steel mill site and the potential of polluting both groundwater and the river.

## **2.6 World Bank Study**

The World Bank is considering expanding their project in Elbasan to include solid waste. A scope of work has been proposed and is currently under review by the Bank. The scope indicates that a very comprehensive study would be performed including waste generation, collection, and disposal.

# **3 WASTEWATER**

## **3.1 Collection**

The Elbasan wastewater collection system includes an estimated 95 km of pipe. The documentation of the existing system is very limited. The only map of the system is an old print which is worn and in poor condition. It has not been updated to include new extensions and some of the sewer pipes indicated on the map cannot be confirmed in the field. The system is being inventoried by the World Bank Feasibility Study and a new map will be prepared.

Another significant deficiency of the wastewater system is the resources available to the wastewater enterprise to perform routine maintenance and sewer extensions to new areas. The enterprise consists of 31 employees and virtually no equipment except a few donkey carts. The operating budget is paid by the central government and is only \$2,000 per month.

Initial findings from the Bank feasibility study indicate that the wastewater collection pipes are too small to convey the combined sewage that they are intended to carry. There are too few curbside basins to permit rainwater to enter the system and the pipes are barely large enough to handle the sanitary sewage but not the rainwater runoff. As a result, rainwater flows primarily in the streets, causing localized flooding problems. Fortunately the City streets were constructed with a good slope, and rainwater is able to drain from the city streets to either the river or the two major drainage canals that pass east and west of the urban area.

Preliminary feasibility study findings indicate a complete new storm sewer system is needed, draining the city streets to the two drainage canals.

### **3.2 Treatment**

The existing sewage system discharges directly to the river at five points, the largest being at the existing solid waste dumping site. Total dry weather discharge is estimated at 1 m<sup>3</sup> per second. Compared to an estimated summer flow in the river of 3 to 5 m<sup>3</sup> there is insufficient dilution of the sewage. The resulting summer contamination of the river and associated aquifer could have a significant impact on downstream water users, including the village of Cerrik.

Preliminary results of World Bank Study indicate that a trunk sewer is required to connect the existing 5 discharges and convey the sewage to a point where a future treatment facility can be constructed. If the treatment facility is not built, the concentrated discharge at one point may have a greater negative impact on the river and groundwater than the existing 5 discharges. Further evaluation is being performed to address the environmental impact of collection and treatment alternatives.

## **4. INFRASTRUCTURE SUMMARY AND RECOMMENDATIONS**

### **4.1 Summary**

The water enterprise is well organized and is very efficiently administered. Existing resources are well documented and the distribution network has been analyzed and computerized so that the impacts of new development or impacts to water supply and storage can be quickly determined. The World Bank project will build upon this strong background data in addressing the primary problem of unaccounted for lost water. Technical efficiency and reliability will be improved through upgrading of all supply pumps and electrical equipment.

The solid waste enterprise is poorly organized and its collection efficiency is below acceptable standards. This is due to a lack of adequate equipment resources and poor management. These deficiencies in the collection systems are being addressed through the Dutch program which will include the operation of a pilot collection zone. Although the pilot collection program is scheduled to begin in January 1997, it is not clear as to how much technical assistance will be offered through the program. The existing enterprise does not have sufficient resources to conduct this pilot operation without significant technical assistance.

Other solid waste issues include the closure of the existing dump site and the location of a new landfill with proper design and operation. The evaluation, location and design of a new landfill are within the proposed scope of the World Bank Project but a decision has not been made by the Bank to include this work. If the Bank decides not to fund Solid Waste in Elbasan, then there will be a significant deficiency in the system. In that event, the existing landfill will continue, or the City will begin using the unused steel mill site without proper controls. Either scenario could lead to significant contamination of the river and associated groundwater aquifers.

Wastewater collection and treatment systems have major deficiencies. These are being addressed by the World Bank Project.

## **4.2 Recommendations**

### **Plumbing Upgrade Pilot Project**

Previous evaluations performed by the Elbasan Water Enterprise have indicated that 75 to 80 percent of unaccounted for water can be attributed to misuse and deferred maintenance within housing units. The past practice of estimating water usage and charging a flat rate, regardless of actual usage, does not provide incentives to conserve water and reduce usage. Although the World Bank Project will address major supply and distribution infrastructure deficiencies, responsible for the other 20 to 25 percent of water loss, there is a need for a strategy to address lost water within housing units. Although the installation of individual user meters will provide an economic incentive to upgrade plumbing fixtures and alter behaviors that misuse water, this program will actually demonstrate this, to the user. The Elbasan water system is an excellent location for this pilot project because of their good organization and past record of billing and collection percentages under the current rate system.

The primary objective of this pilot project will be to document the cost effectiveness of system maintenance and behavior changes that reduce water usage. This will be accomplished by actually measuring water use before and after deferred maintenance is performed and behaviors are modified through a structured educational program. By implementing this pilot program using water enterprise staff, it can be replicated throughout the Elbasan distribution system. Another important objective is to structure the program so that it can be replicated in other cities in Albania.

### **Other Potential Projects**

In addition to the above project, two other infrastructure projects have been identified that will improve infrastructure services in Elbasan. Although these projects are included in preliminary planning for the Dutch pilot project and expanded World Bank Feasibility Study, they have not been confirmed. In the event that they are not performed, they will result in significant system deficiencies. These two projects are:

1. Technical Assistance for Waste Collection
2. Preliminary Landfill Design and Operation